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Service Manual

TOYOTA

ORDER NO.
CRT3743

LEXUS RX (hybrid)

AUDIO SYSTEM
HEAD UNIT

VEHICLE	DESTINATION	PRODUCED AFTER	OEM PARTS No.	ID No.	PIONEER MODEL No.
RX (hybrid)	U.S.A., CANADA, HAWAII, PUERTO RICO	June 2006	86120-0E070	AP6867	FX-MG9167ZT/X1H/UC FX-G9167ZT91/X1HUC

Manufactured for TOYOTA
by PIONEER CORPORATION

PUB.NO.CRT3743

This service manual should be used together with the following manual(s) listed below. For the parts numbers, adjustments, etc. which are not shown in this manual, refer to the following manual(s).

Model No.	Order No.	Mech.Module	Remarks
FX-MG9067ZT/UC	CRT3549		
CX-3168	CRT3467	G3	CD Mech. Module:Circuit Over View, Mech. Over View, Disassembly, How to Assemble
CX-1011	CRT2406	3L	Cassette Mech. Module:Mech. Description, Disassembly

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

Supplementary model is identical to the original except for the addition of following items.

*:Non spare part

Description	FX-G9167ZT91/X1HUC
Cover	CEG1045 (x2)
Cover	CEG1325
Carton	CHG4861
Contain Box	CHL4861 (x1/2)
Air Cushioned Bag	*CHW1945
Air Cushioned Bag	*CHW1948 (x2)

EXPLODED VIEWS AND PARTS LIST

EXTERIOR(1)(Page 8)

EXTERIOR(1) SECTION PARTS LIST

Mark	No.	Description	FX-MG9067ZT/UC	FX-MG9167ZT/X1H/UC
	3	86211-48030-A	CND1247	HND1247
	4	86212-48030-A	CND1248	HND1248
	20	Main Unit	CWN1115	CWN2283
	41	CD Mechanism Module(G3)(Service)	CXX2020	CXX2017
	46	Frame Unit	CXC4809	CXC7076
	47	Door Unit	CXC4845	CXC6899
	52	Spring Plate	CBL1731	Not used
	55	Sheet	CNN1208	Not used

EXTERIOR(2)(Page 10)

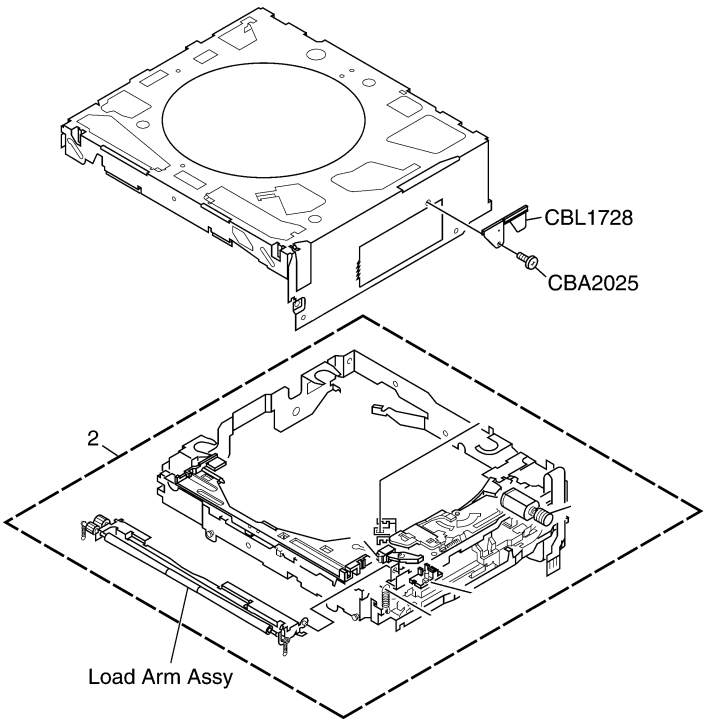
EXTERIOR(2) SECTION PARTS LIST

Mark	No.	Description	FX-MG9067ZT/UC	FX-MG9167ZT/X1H/UC
	1	Grille Assy	CXC4728	CXC5496
	28	Grille Assy	CXC4790	CXC5447
	43	Door	CAT2709	CAT2755

CD MECHANISM MODULE(Page 12)

CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	FX-MG9067ZT/UC	FX-MG9167ZT/X1H/UC
	1	Control Unit	CWX3138	CWX3422
	2	Stage Assy(Service)	CXX1969	CXX2019
	9	Sheet	CNN1064	Not used
	10	Gear	CNV7856	CNV8945
	11	Gear	CNV7851	CNV8944
	17	Case	CND1934	CND3481
	22	Cam	CNV7932	CNV8779
	23	Cam	CNV7867	CNV8778
	38	ELV Motor Assy(ELV)(M2)	CXC5906	CXC5910
	40	Tray Assy	CXC3141	CXC6726
	41	Under Tray Assy	CXC6247	CXC6780
	49	Cam Motor Assy(CAM)(M1)	CXC5904	CXC5908
	50	Mechanism Unit(G3)(Service)	CXX2021	CXX2018
		Load Arm Assy	CXC4803	CXC6653
		Screw (M2 x 1.4)	Not used	CBA2025
		Spring Plate	Not used	CBL1728



ELECTRICAL PARTS LIST(Page 67)

MAIN UNIT

Circuit Symbol and No.		FX-MG9067ZT/UC	FX-MG9167ZT/X1H/UC
IC502	IC	PEG186A	PEG321A
Q106	Transistor	2SA1576	2SA1576A
Q107	Transistor	2SA1576	2SA1576A
Q311	Transistor	DTC144EU	DTC144EUA
Q604	Transistor	2SA1576	2SA1576A
Q606	Transistor	2SA1576	2SA1576A
Q617	Transistor	2SA1576	2SA1576A
L401	Inductor	CTF1616	ATH1162
R10		RS1/16SS471J	RS1/16SS271J
R421		RS1/16S0R0J	Not used

CONTROL UNIT

Circuit Symbol and No.		FX-MG9067ZT/UC	FX-MG9167ZT/X1H/UC
IC701	IC	PE5455A	PE5569A
D601	Diode	M1MA152WAT1G	M1MA152WAT1

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Service Manual

TOYOTA

ORDER NO.
CRT3549

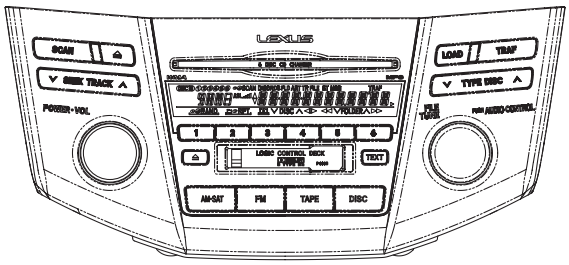
LEXUS RX350
AUDIO SYSTEM
HEAD UNIT

VEHICLE	DESTINATION	PRODUCED AFTER	OEM PARTS No.	ID No.	PIONEER MODEL No.
RX350	U.S.A., CANADA	January 2006	86120-48A20	P6863	FX-MG9067ZT/UC
RX350	U.S.A., CANADA	January 2006	86120-48C40	P6863	FX-MG9067ZT-91/UC
RX350	U.S.A., CANADA	January 2006	86120-0E070	AP6867	FX-MG9067ZT/X1H/UC
RX350	U.S.A., CANADA	January 2006	86120-0E110	AP6867	FX-G9067ZT91/X1HUC

Manufactured for TOYOTA
by PIONEER CORPORATION

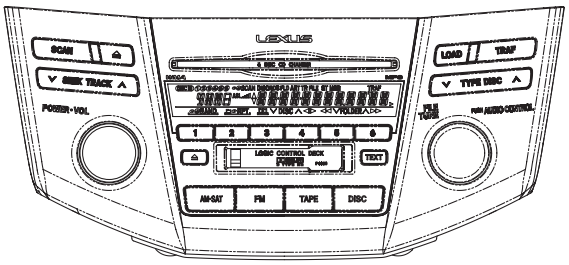
PUB.NO.CRT3549

FX-MG9067ZT/UC



ID No. P6863

FX-MG9067ZT/X1H/UC



ID No. AP6867

This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech.Module	Remarks
CX-3168	CRT3467	G3	CD Mech. Module : Circuit Over View, Mech. Over View, Disassembly, How To Assemble
CX-1011	CRT2406	3L	Cassette Mech. Module:Mech. Description, Disassembly

Supplementary model is identical to the original except for the addition of following items.

*:Non spare part

Description	FX-MG9067ZT-91/UC
Cover	CEG1045 (x2)
Cover	CEG1325
Carton	CHG4861
Contain Box	CHL4861 (x1/2)
Air Cap	* CHW1945

Description	FX-G9067ZT91/X1HUC
Polyethylene Bag	* HEG0036
Cover	* HEG0037
Carton	HHG0432
Protector	HHP0248
Protector	HHP0270

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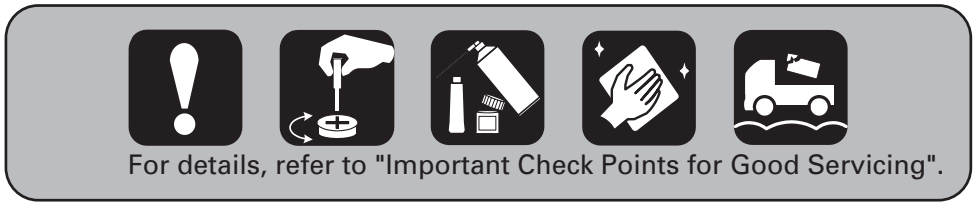


SAFETY INFORMATION

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.
Health & Safety Code Section 25249.6 - Proposition 65

● Service Precautions

1. You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.
2. Make sure to install grille when charging power.
   (*If you fail to do so, the main body will identify it as “a model without display” and the button will not function.)

CD MECHANISM MODULE section precaution

1. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
2. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY" .

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

SAFETY INFORMATION....3
1. SPECIFICATIONS....6
2. EXPLODED VIEWS AND PARTS LIST....7
2.1 EXTERIOR(1)....8
2.2 EXTERIOR(2)....10
2.3 CD MECHANISM MODULE....12
2.4 CASSETTE MECHANISM MODULE....14
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM....16
3.1 BLOCK DIAGRAM....16
3.2 MAIN UNIT(1/3)(GUIDE PAGE)....22
3.3 MAIN UNIT(2/3)(GUIDE PAGE)....28
3.4 MAIN UNIT(3/3)....34
3.5 KEYBOARD PCB....36
3.6 CD MECHANISM MODULE(GUIDE PAGE)....38
3.7 L PCB....48
3.8 R PCB....49
3.9 CASSETTE MECHANISM MODULE....50
4. PCB CONNECTION DIAGRAM....52
4.1 MAIN UNIT....52
4.2 KEYBOARD PCB....56
4.3 CONTROL UNIT....60
4.4 RPS PCB ASSY....62
4.5 L PCB....63
4.6 R PCB....64
4.7 DECK UNIT....65
4.8 SENSOR UNIT....66
5. ELECTRICAL PARTS LIST....67
6. ADJUSTMENT....78
6.1 JIG CONNECTION DIAGRAM....78
6.2 DOLBY ADJUSTMENT....79
6.3 CD ADJUSTMENT....80
6.4 ERROR MODE....84
7. GENERAL INFORMATION....88
7.1 DIAGNOSIS....88
7.1.1 AVC-LAN DIAGNOSIS MODE....88
7.1.2 DISASSEMBLY....94
7.1.3 CONNECTOR FUNCTION DESCRIPTION....97
7.2 PARTS....98
7.2.1 IC....98
7.2.2 DISPLAY....107
7.3 EXPLANATION....108
7.3.1 OPERATIONAL FLOW CHART....108
7.3.2 SYSTEM BLOCK DIAGRAM....109
8. OPERATIONS....110

1. SPECIFICATIONS

General

Power source.....13.2V DC(10.5–16.0 V allowable)
Grounding system.....Negative type
Backup current.....0.15mA or less
Weight.....3,071g

CD player

Signal format.....Sampling frequency : 44.1kHz
Number of quantization bits : 16;linear
System.....Compact disc audio system
Usable discs.....Compact disc
Distortion.....0.2% or less
S/N.....80dB or more
Separation.....65dB or more
Stereo balance.....1.5dB with in
Dynamic range.....80dB or more

Cassette player

Tape.....Compact cassette tape(C30–C90)
Tape speed.....4.76cm/sec.(+0.14cm/sec.,-0.05cm/sec.)
Wow and flutter.....0.2% or less(WRMS)
Distortion.....3% or less
S/N.....40dB or more
Crosstalk.....40dB or more
Stereo Separation.....30dB or more

FM tuner

Frequency.....87.75–107.9 MHz
S/N.....46dB or more
Distortion.....1.5% or less
Image interference.....35dB or more
IF interference.....80dB or more

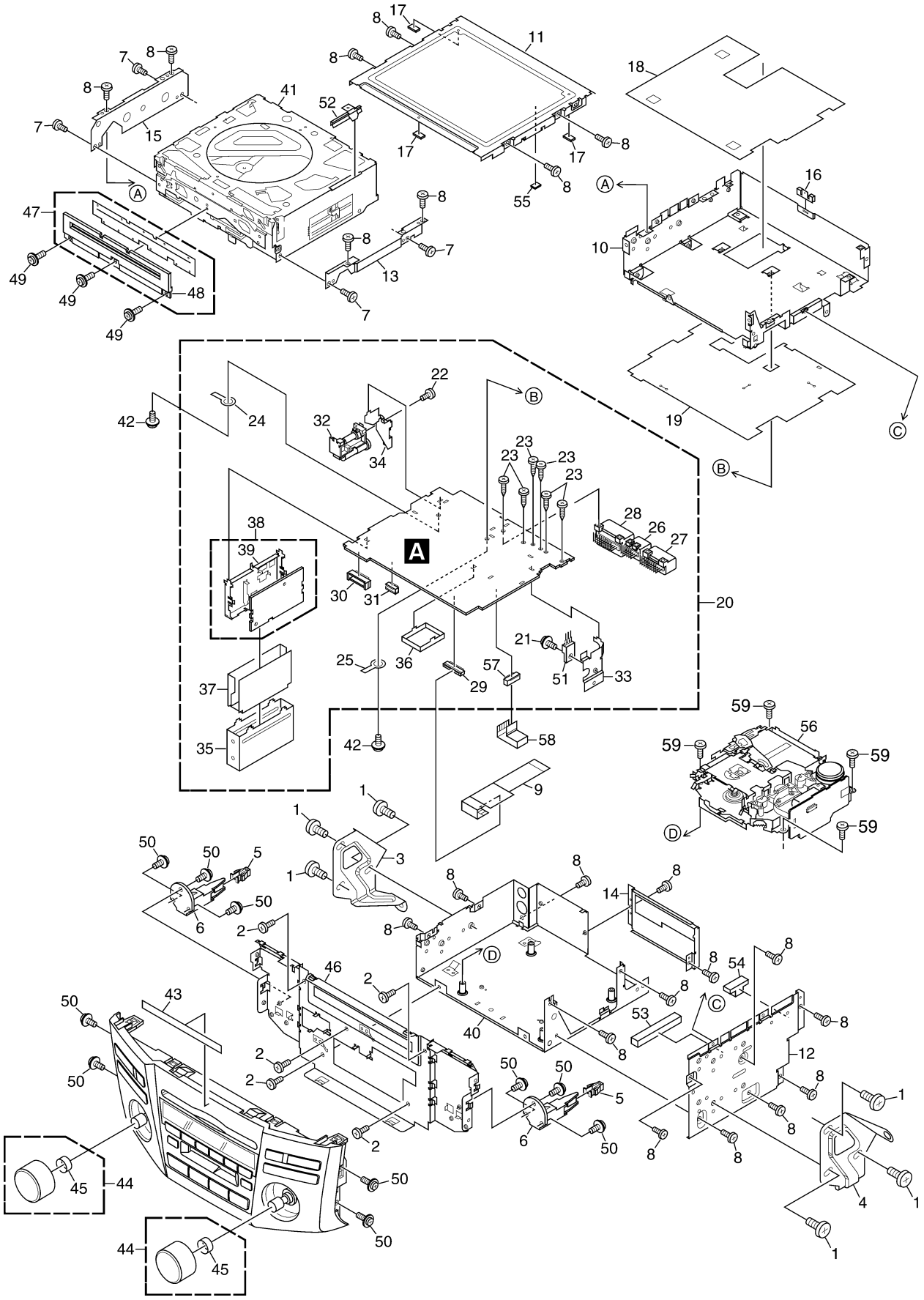
AM tuner

Frequency.....530–1,710 kHz
S/N.....42dB or more
Distortion.....1.5% or less
IF interference.....55dB or more
Image interference.....45dB or more

2. EXPLODED VIEWS AND PARTS LIST

NOTES : • *Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
• *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
• *Screw adjacent to▽mark on the product are used for disassembly.*
• *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions,apply as you think it appropriate.)*

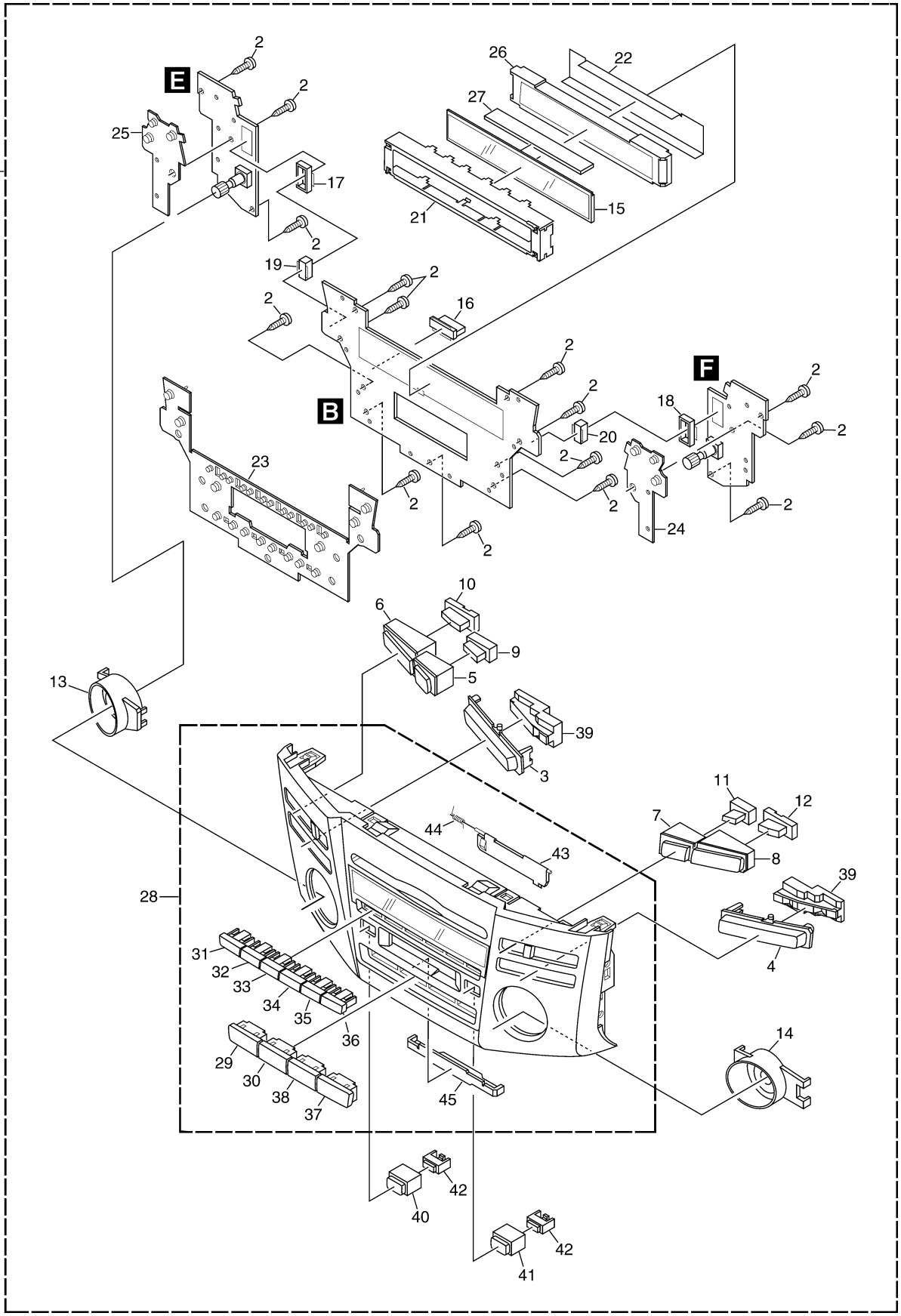
2.1 EXTERIOR(1)



EXTERIOR(1) SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ50P080FTC
	2	Screw	BSZ26P040FTC
	3	86211-48030-A	CND1247
	4	86212-48030-A	CND1248
	5	90467-10203	CNV5641
	6	Guide	CNV7306
	7	Screw	BMZ30P040FTC
	8	Screw	BSZ26P040FTC
	9	Connector	CDE7680
	10	Chassis	CNA2772
	11	Case	CNB3049
	12	Holder	CND2425
	13	Holder	CND2427
	14	Holder	CND2532
	15	Holder	CND2721
	16	Earth Plate	CND3060
	17	Cushion	CNM9507
	18	Insulator	CNM9678
	19	Insulator	CNM9701
	20	Main Unit	CWN1115
	21	Screw	ASZ26P060FTC
	22	Screw	BMZ30P040FTC
	23	Screw(M3x6)	CBA1393
	24	Terminal(CN101)	CKF1064
	25	Terminal(CN304)	CKF1064
	26	Connector(CN301)	CKM1466
	27	Connector(CN303)	CKM1467
	28	Connector(CN302)	CKM1469
	29	Connector(CN406)	CKS3886
	30	Connector(CN408)	CKS4266
	31	Connector(CN501)	CKS4853
	32	Connector(ANT11)	CKX1064
	33	Holder	CND2431
	34	Holder	CND2434
	35	Shield	CND2436
	36	Shield	CND3061
	37	Insulator	CNM9861
	38	FM/AM Tuner Unit(Y101)	CWE1836
	39	Holder	CND2144
	40	Chassis Unit	CXC3677
	41	CD Mechanism Module(030L_T)(Service)	CXX2020
	42	Screw	PMH26P060FTC
	43	Label	CRW1455
	44	Knob Unit	CXC4800
	45	Spring	CBL1711
	46	Frame Unit	CXC4809
	47	Door Unit	CXC4845
	48	Door	CAT2730
	49	Screw	IMS20P022FTC
	50	Screw	IMS26P060FTC
	51	Transistor(Q755)	2SB1185
	52	Spring	CBL1727
	53	Cushion	CNN1205
	54	Cushion	CNN1206
	55	Sheet	CNN1208
	56	Cassette Mechanism Module	EXK4298
	57	Connector(CN404)	CKS5280
	58	Connector	CDE7684
	59	Screw	BSZ26P050FTC

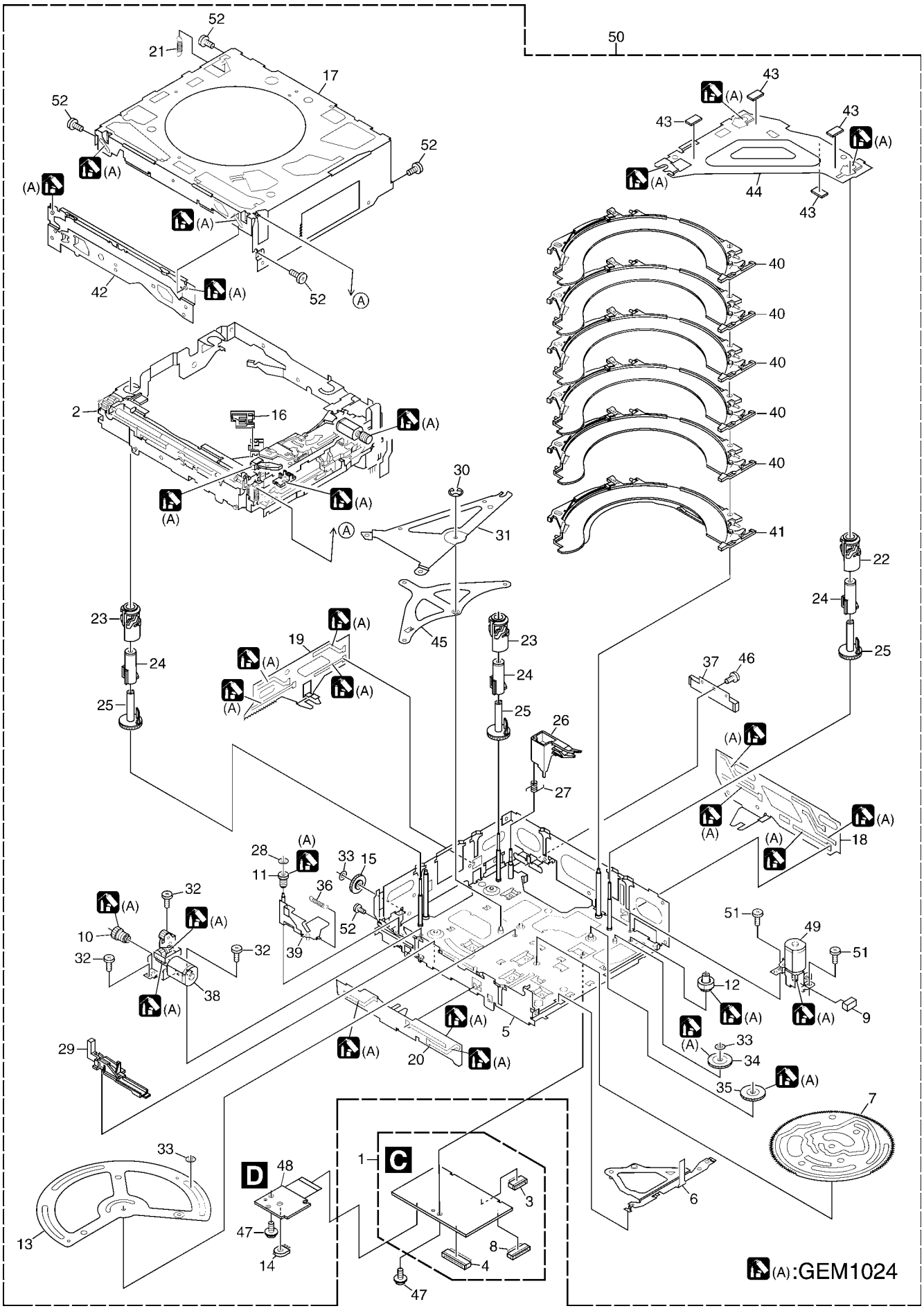
2.2 EXTERIOR(2)



EXTERIOR(2) SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Grille Assy(MG9067ZT,MG9067ZT-91)	CXC4728
		Grille Assy(9067ZT/X1H,9067ZT91/X1H)	CXC5496
	2	Screw	BPZ20P080FTC
	3	Button(SEEK-TRACK)	CAC9205
	4	Button(TYPE-DISC)	CAC9206
	5	Button(CD EJECT)	CAC9213
	6	Button(SCAN)	CAC9214
	7	Button(LOAD)	CAC9215
	8	Button(TRAF)	CAC9216
	9	Lighting Conductor	CNV8527
	10	Lighting Conductor	CNV8528
	11	Lighting Conductor	CNV8529
	12	Lighting Conductor	CNV8530
	13	Lighting Conductor	CNV8678
	14	Lighting Conductor	CNV8679
	15	LCD(LCD801)	CAW1867
	16	Connector(CN802)	CKS4771
	17	Connector(CN980)	CKS5202
	18	Connector(CN990)	CKS5202
	19	Connector(CN801)	CKS5203
	20	Connector(CN803)	CKS5203
	21	Holder	CND2773
	22	Sheet	CNM9563
	23	Rubber	CNV8536
	24	Rubber	CNV8537
	25	Rubber	CNV8538
	26	Lighting Conductor	CNV8539
	27	Connector	CNV8540
	28	Grille Assy(MG9067ZT,MG9067ZT-91)	CXC4790
		Grille Assy(9067ZT/X1H,9067ZT91/X1H)	CXC5447
	29	Button(AM-SAT)	CAC9207
	30	Button(FM)	CAC9208
	31	Button(1)	CAC9217
	32	Button(2)	CAC9218
	33	Button(3)	CAC9219
	34	Button(4)	CAC9220
	35	Button(5)	CAC9221
	36	Button(6)	CAC9222
	37	Button(DISC)	CAC9210
	38	Button(TAPE)	CAC9209
	39	Holder Unit	CXC6105
	40	Button(CAS EJECT)	CAC9211
	41	Button(TEXT)	CAC9212
	42	Lighting Conductor	CNV8532
	43	Door	CAT2709
	44	Spring	CBH2663
	45	Lighting Conductor	CNV8533

2.3 CD MECHANISM MODULE

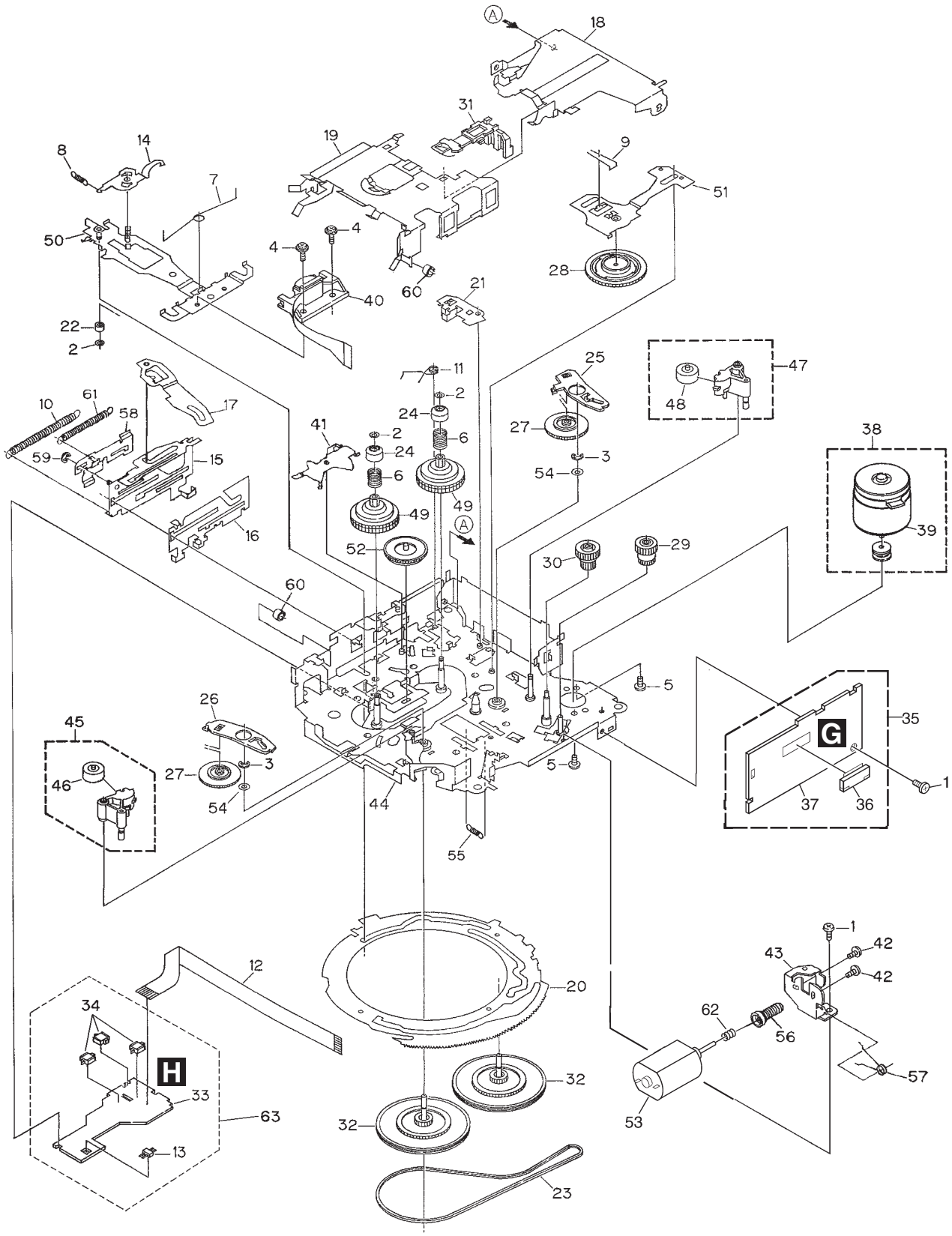


CD MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Control Unit	CWX3138
	2	Stage Assy(Service)	CXX1969
	3	Connector(CN102)	CKS4937
	4	Connector(CN902)	CKS4914
*	5	Chassis Unit	CXC2394
*	6	Lever Unit	CXC2393
*	7	Cam Gear Unit	CXC2435
	8	Connector(CN101)	CKS4840
	9	Sheet	CNN1064
	10	Gear	CNV7856
	11	Gear	CNV7851
	12	Gear	CNV7854
*	13	Gear	CND1924
	14	Variable Resistor(VR13)	CCW1029
	15	Gear	CND1939
	16	Arm	CNV7869
	17	Case	CND1934
	18	Stair	CND1932
	19	Stair	CND1931
	20	Stair	CND1930
	21	Spring	CBH2731
	22	Cam	CNV7932
	23	Cam	CNV7867
	24	Cam	CNV7868
	25	Cam	CNV7866
	26	Arm	CNV7850
	27	Spring	CBH2732
	28	Washer	CBF1094
	29	Holder	CNV7861
	30	Washer	YE15FTC
*	31	Arm	CND1926
	32	Screw(M2x2.5)	CBA1823
	33	Washer	CBF1064
*	34	Gear	CND1936
*	35	Gear	CND1937
	36	Spring	CBH2720
	37	PCB Assy	CXC3142
	38	ELV Motor Assy(ELV)(M2)	CXC5906
*	39	Lever Unit	CXC2392
	40	Tray Assy	CXC3141
	41	Under Tray Assy	CXC6247
	42	Shutter Assy	CXC5126
	43	Sheet	CNM9680
	44	Holder Unit	CXC2418
*	45	Arm	CND1933
	46	Screw	BMZ20P025FTC
	47	Screw	IMS26P025FTC
	48	RPS PCB Assy	CWX2986
	49	Cam Motor Assy(CAM)(M1)	CXC5904
	50	Mechanism Unit(G3)(Service)	CXX2021
	51	Screw	JFZ20P020FTC
	52	Screw(M2x2.5)	CBA1623

2.4 CASSETTE MECHANISM MODULE

For grease application, refer to the service manual for CX-1011 (CRT2406).

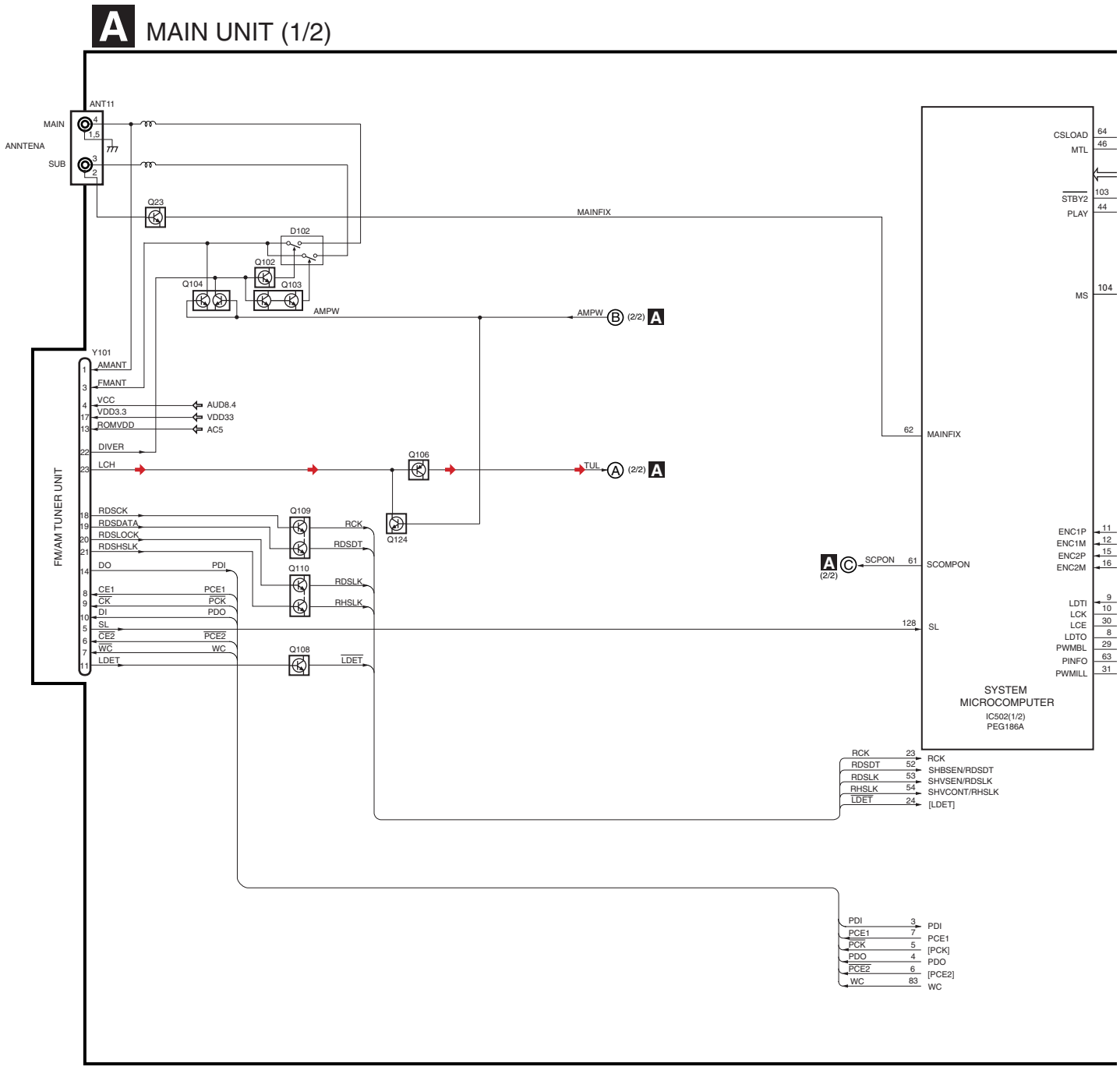


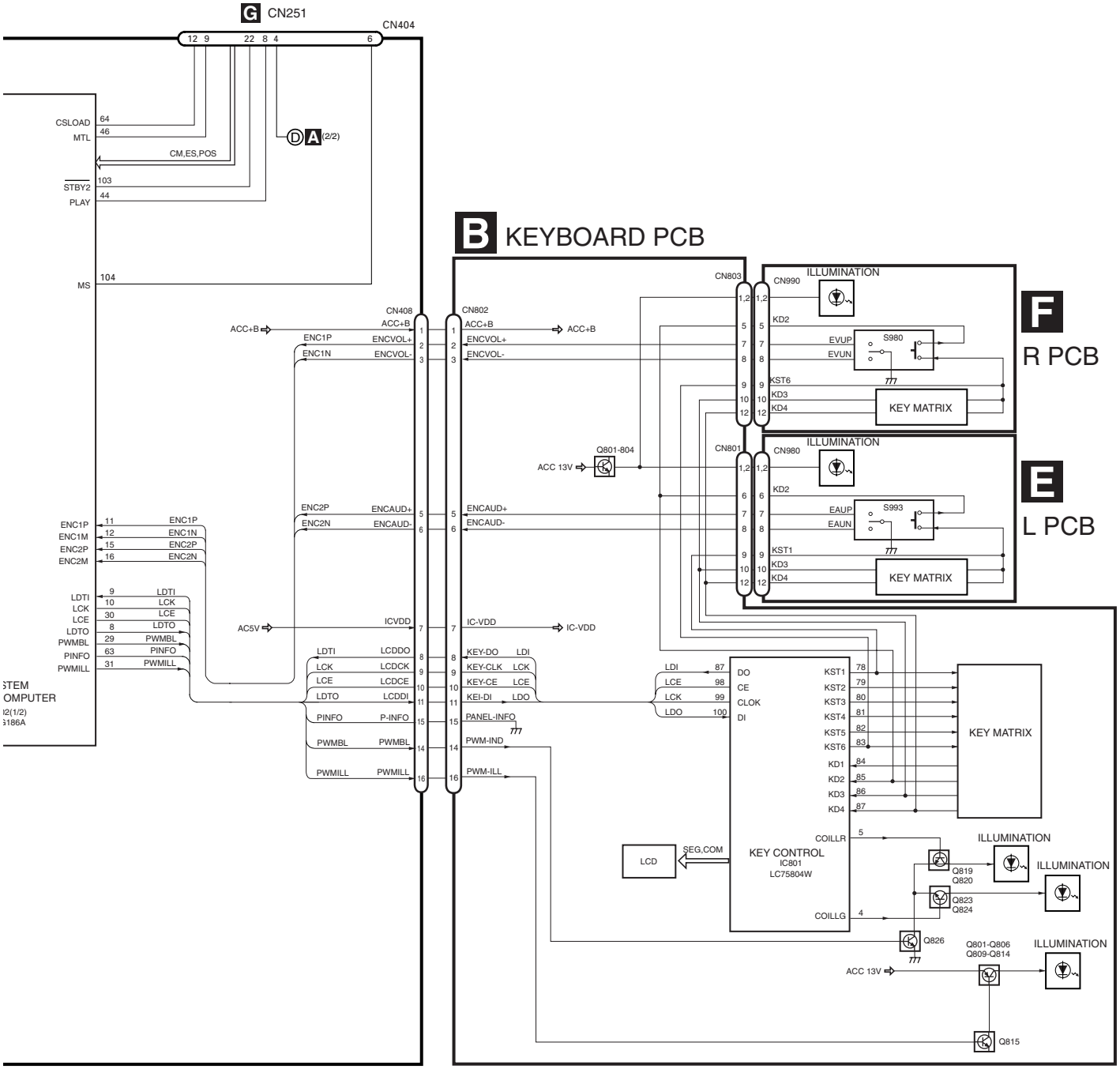
CASSETTE MECHANISM MODULE SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ20P040FTC
	2	Washer	CBF1037
	3	Washer	CBG1003
	4	Screw	EBA1028
	5	Screw	BMZ20P022FTC
	6	Spring	EBH1653
	7	Spring	EBH1642
	8	Spring	EBH1641
	9	Spring	EBH1626
	10	Spring	EBH1627
	11	Spring	EBH1648
	12	Cord	EDD1024
	13	Photo-reflector(Q101)	EGN1004
	14	Arm	ENC1526
	15	Lever Unit	EXA1610
	16	Lever	ENC1543
	17	Arm	ENC1532
	18	Frame	ENC1533
	19	Holder	ENC1547
	20	Gear	ENC1535
	21	Arm	ENC1550
	22	Roller	ENR1040
	23	Belt	ENT1027
	24	Collar	ENV1508
	25	Arm	ENV1539
	26	Arm	ENV1540
	27	Gear	ENV1569
	28	Gear	ENV1547
	29	Gear	ENR1044
	30	Worm Wheel	ENV1559
	31	Lever	ENV1551
	32	Flywheel	ENV1607
	33	Gathering PCB	ENX1073
	34	Switch(S101,S102,S103)	ESG1007
	35	Deck Unit	EWM1055
	36	Plug(CN251)	EKS1026
	37	Gathering PCB	ENX1080
	38	Motor Unit(M1)	EXA1618
	39	Motor	EXM1035
	40	Head Assy(HD1)	EXA1594
	41	Arm	ENC1537
	42	Screw	EBA1031
	43	Bracket	ENC1559
	44	Chassis Unit	EXA1636
	45	Pinch Holder Unit	EXA1608
	46	Pinch Roller	ENV1518
	47	Pinch Holder Unit	EXA1607
	48	Pinch Roller	ENV1518
	49	Reel Unit	EXA1625
	50	Head Base Unit	EXA1611
	51	Lever Unit	EXA1587
	52	Gear Unit	EXA1632
	53	Motor Unit(M2)	EXA1660
	54	Washer	HBF-179
	55	Spring	EBH1537
	56	Worm Gear	ENV1564
	57	Spring	EBH1672
	58	Lever	ENC1548
	59	Washer	YE15FTC
	60	Tube	ENM1039
	61	Spring	EBH1645
	62	Spring	EBH1545
	63	Sensor Unit	EWM1057

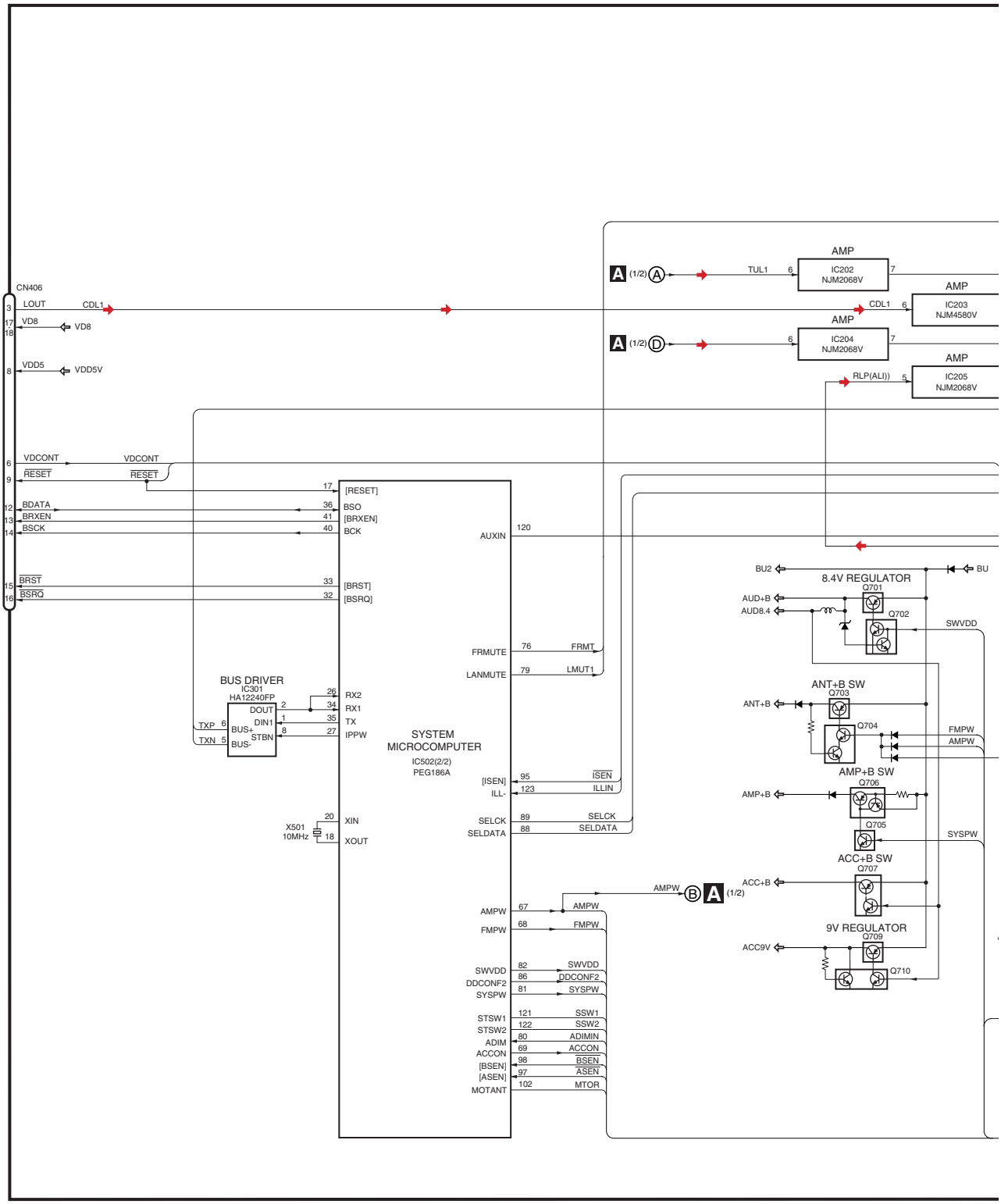
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

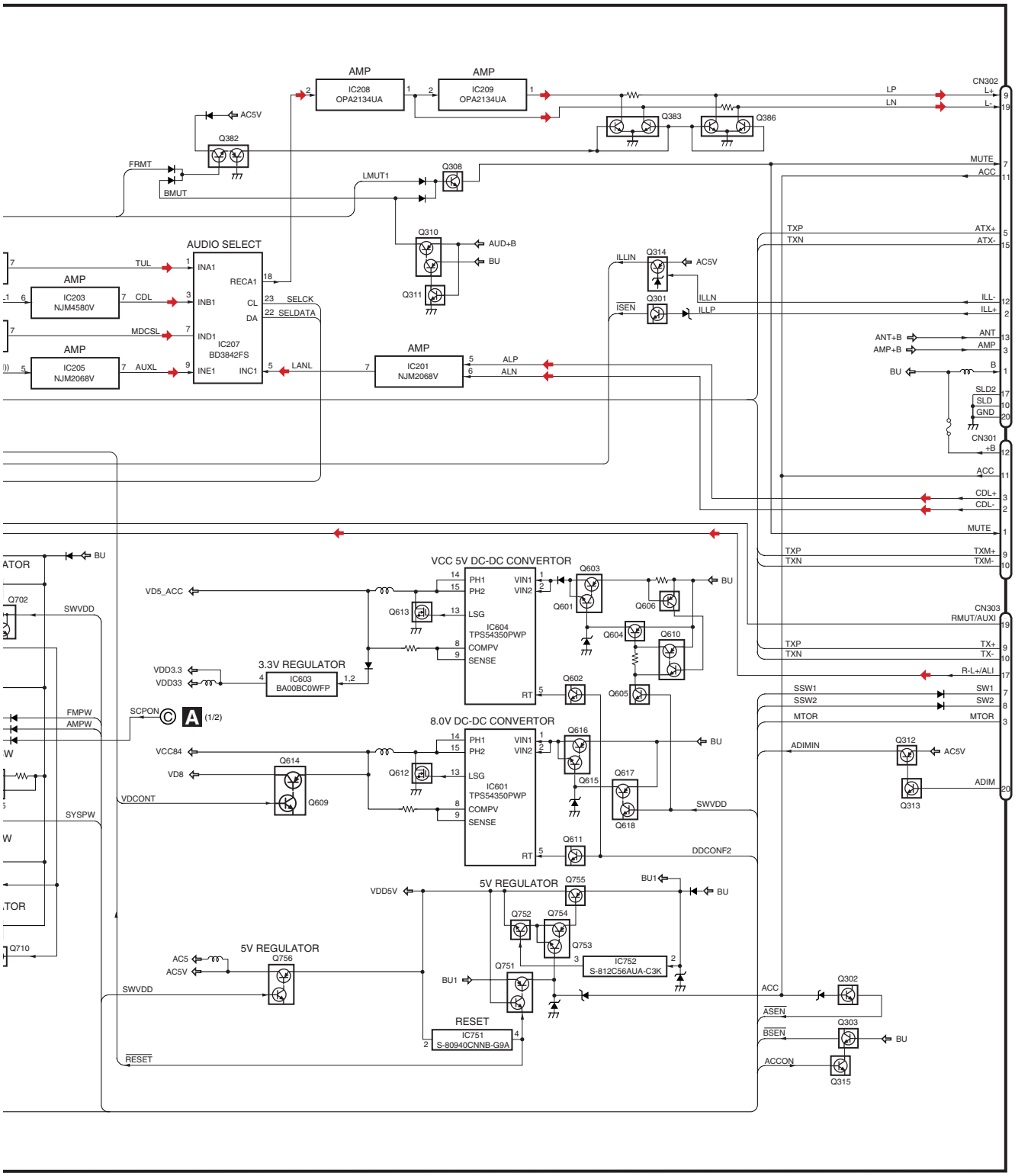
3.1 BLOCK DIAGRAM

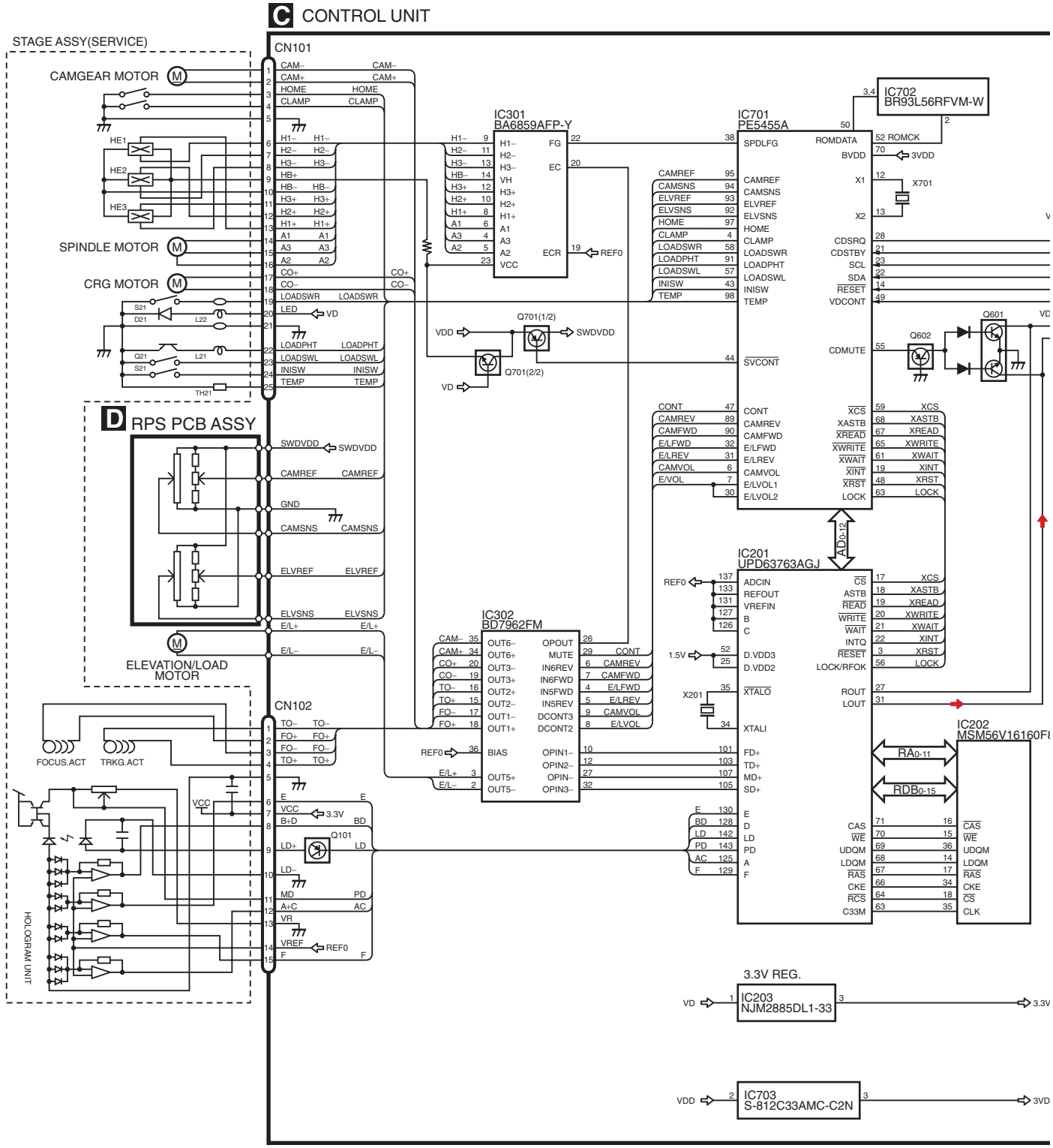


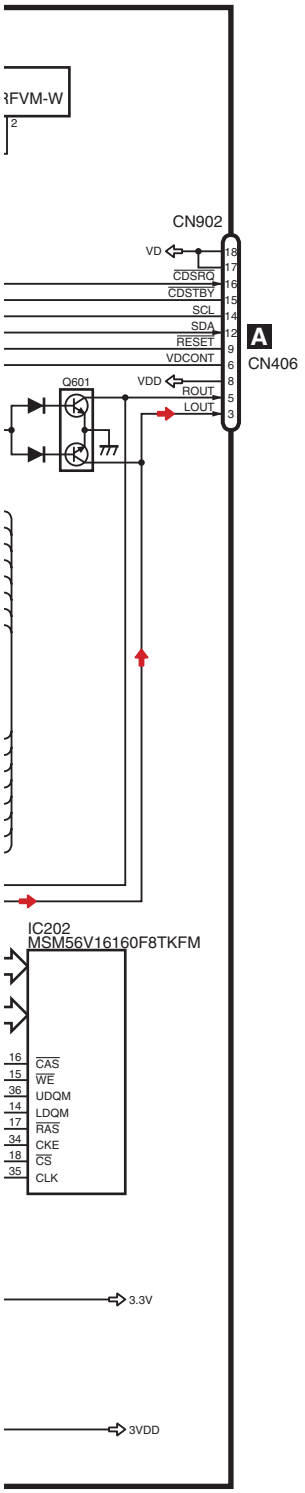

G CN251
CN404
12 9 22 8 4 6
CSLOAD 64
MTL 46
CM,ES,POS
D A (2/2)
STBY2 103
PLAY 44
MS 104
B KEYBOARD PCB
CN408
CN802
CN803
CN801
ACC+B
ENC1P
ENC1N
ENCVOL+
ENCVOL-
ENC2P
ENC2N
ENCAUD+
ENCAUD-
ICVDD
IC-VDD
LDTI
LCK
LCE
LDTO
PWMBL
PINFO
PWMILL
LCDDO
LCDCK
LCDCE
LCDDI
P-INFO
KEY-DO
KEY-CLK
KEY-CE
KEI-DI
PANEL-INFO
PWM-IND
PWM-ILL
AC5V
ACC 13V
Q801-804
ILLUMINATION
CN990
CN980
KD2
EVUP
EVUN
S980
EAUP
EAUN
S993
KST6
KST1
KD3
KD4
KEY MATRIX
F R PCB
E L PCB
DO
CE
CLOK
DI
KST1
KST2
KST3
KST4
KST5
KST6
KD1
KD2
KD3
KD4
KEY CONTROL
IC801
LC75804W
LCD
SEG,COM
COILLR
COILLG
Q819
Q820
Q823
Q824
Q826
Q801-Q806
Q809-Q814
Q815

A MAIN UNIT (2/2)

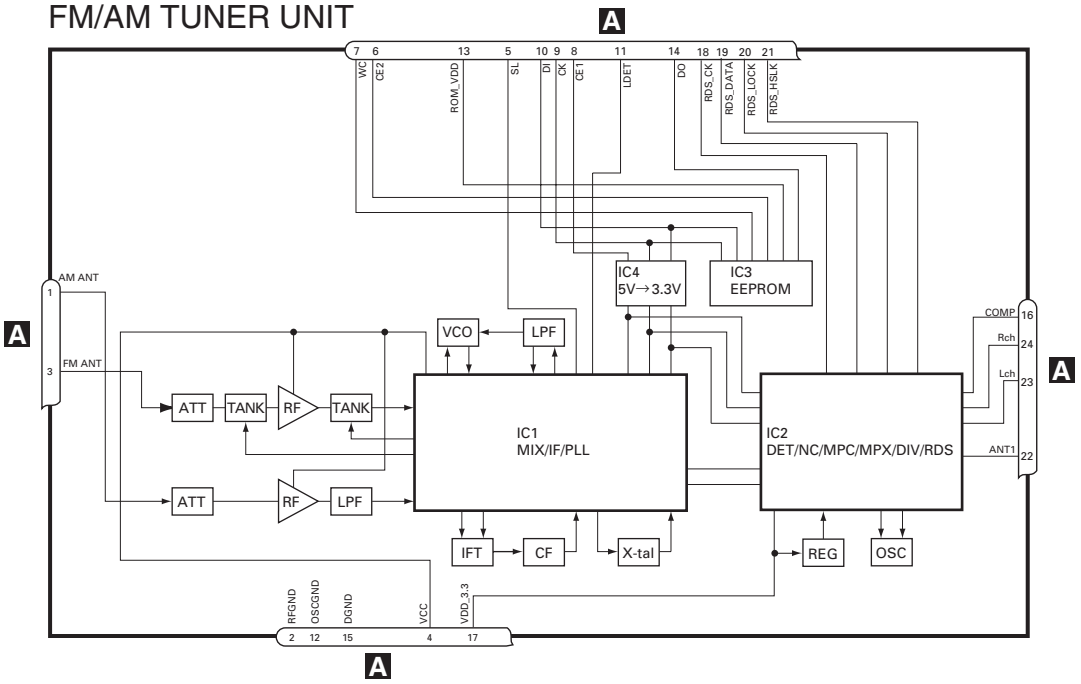



AMP
IC208
OPA2134UA
AMP
IC209
OPA2134UA
AC5V
Q382
FRMT
BMUT
LMUT1
Q308
Q383
Q386
LP
LN
CN302
L+
L-
MUTE
ACC
AUDIO SELECT
IC207
BD3842FS
INA1
INB1
IND1
INE1
RECA1
CL
DA
INC1
TUL
CDL
MDCSL
AUXL
SELCK
SELDATA
LANL
AMP
IC203
NJM4580V
AMP
IC205
NJM2068V
AMP
IC201
NJM2068V
ALP
ALN
Q310
Q311
AUD+B
BU
ILLIN
Q314
AC5V
ISEN
Q301
ILLN
ILLP
TXP
TXN
ATX+
ATX-
ILL-
ILL+
ANT+B
AMP+B
ANT
AMP
B
SLD2
SLD
GND
CN301
+B
CDL+
CDL-
TXM+
TXM-
CN303
RMUT/AUX
TX+
TX-
R-L+/ALI
SW1
SW2
MTOR
ADIMIN
ADIM
Q312
Q313
AC5V
SSW1
SSW2
VCC 5V DC-DC CONVERTOR
IC604
TPS54350PWP
PH1
PH2
LSG
COMPV
SENSE
VIN1
VIN2
RT
Q603
Q601
Q606
Q604
Q610
Q602
Q605
VD5_ACC
Q613
3.3V REGULATOR
IC603
BA00BC0WFP
VDD3.3
VDD33
8.0V DC-DC CONVERTOR
IC601
TPS54350PWP
Q616
Q615
Q617
Q618
Q611
VCC84
VD8
Q614
Q612
Q609
VDCONT
SWVDD
DDCONF2
SCPON
A (1/2)
FMPW
AMPW
SYSPW
Q702
Q710
5V REGULATOR
Q755
Q752
Q754
Q753
IC752
S-812C56AUA-C3K
VDD5V
BU1
5V REGULATOR
Q756
AC5
AC5V
SWVDD
Q751
RESET
IC751
S-80940CNNB-G9A
RESET
ACC
Q302
ASEN
BSEN
Q303
ACCON
Q315

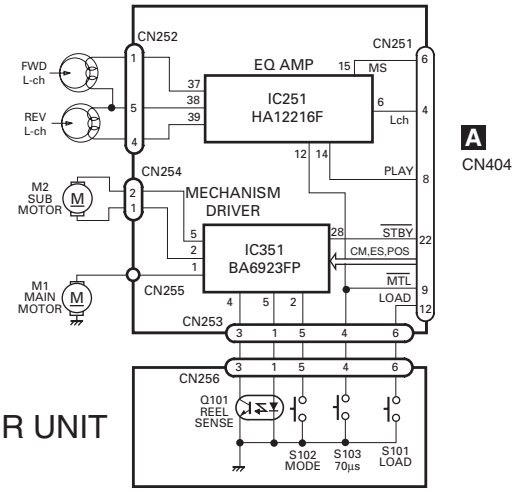

C CONTROL UNIT
STAGE ASSY(SERVICE)
CN101
CAMGEAR MOTOR
SPINDLE MOTOR
CRG MOTOR
HE1
HE2
HE3
S21
D21
L22
Q21
L21
TH21
D RPS PCB ASSY
ELEVATION/LOAD MOTOR
CN102
FOCUS.ACT
TRKG.ACT
HOLOGRAM UNIT
Q101
IC301 BA6859AFP-Y
IC302 BD7962FM
IC701 PE5455A
IC702 BR93L56RFVM-W
IC201 UPD63763AGJ
IC202 MSM56V16160F
Q701(1/2)
Q701(2/2)
Q601
Q602
X701
X201
AD0-12
RA0-11
RDB0-15
3.3V REG.
IC203 NJM2885DL1-33
IC703 S-812C33AMC-C2N
3.3V
3VD
SWDVDD
VD
REF0



FM/AM TUNER UNIT



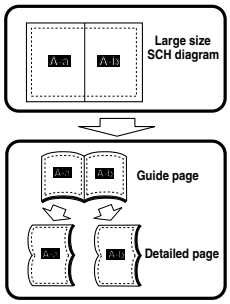
G DECK UNIT



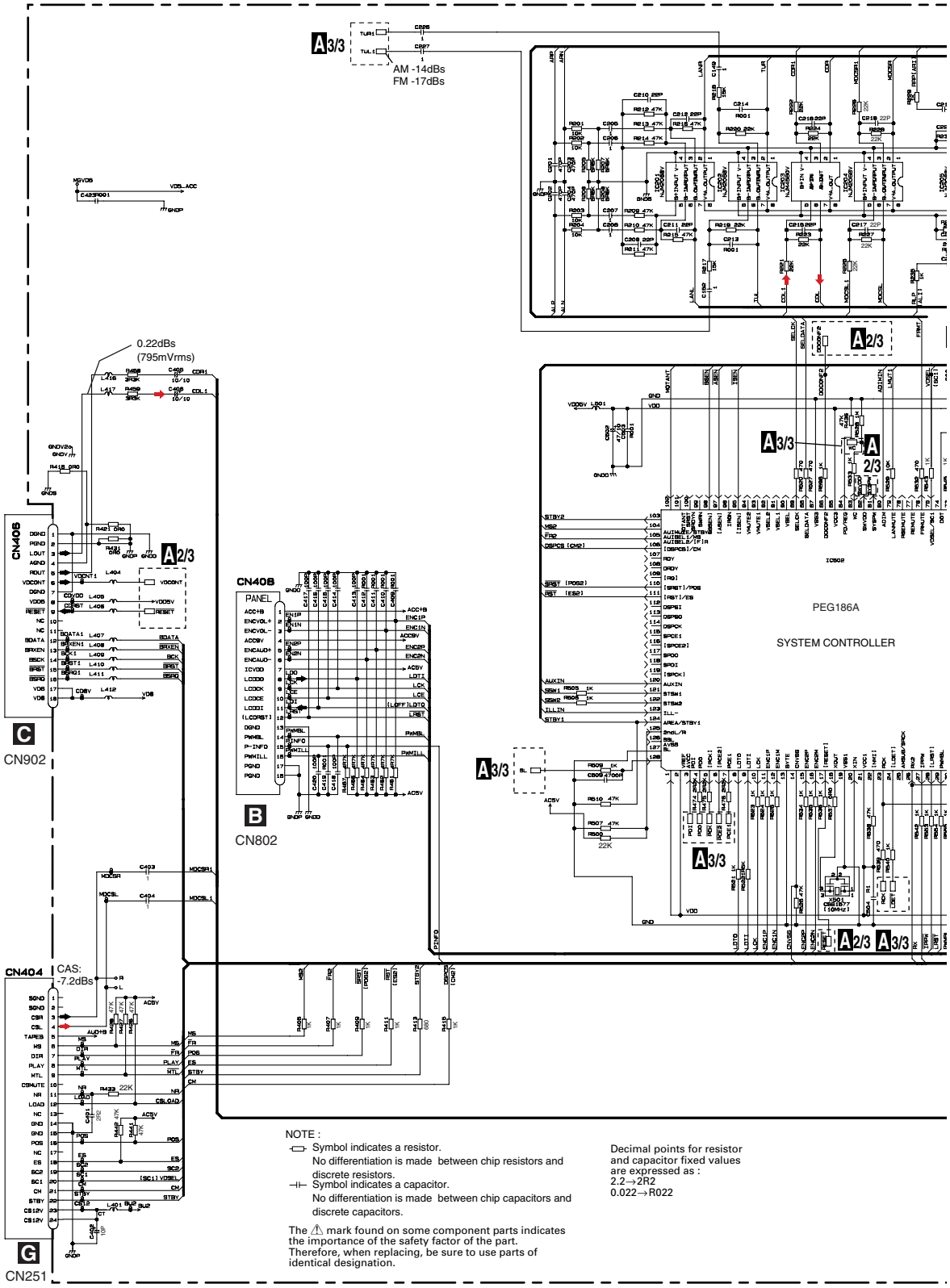
H SENSOR UNIT

3.2 MAIN UNIT(1/3)(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-a 1/3



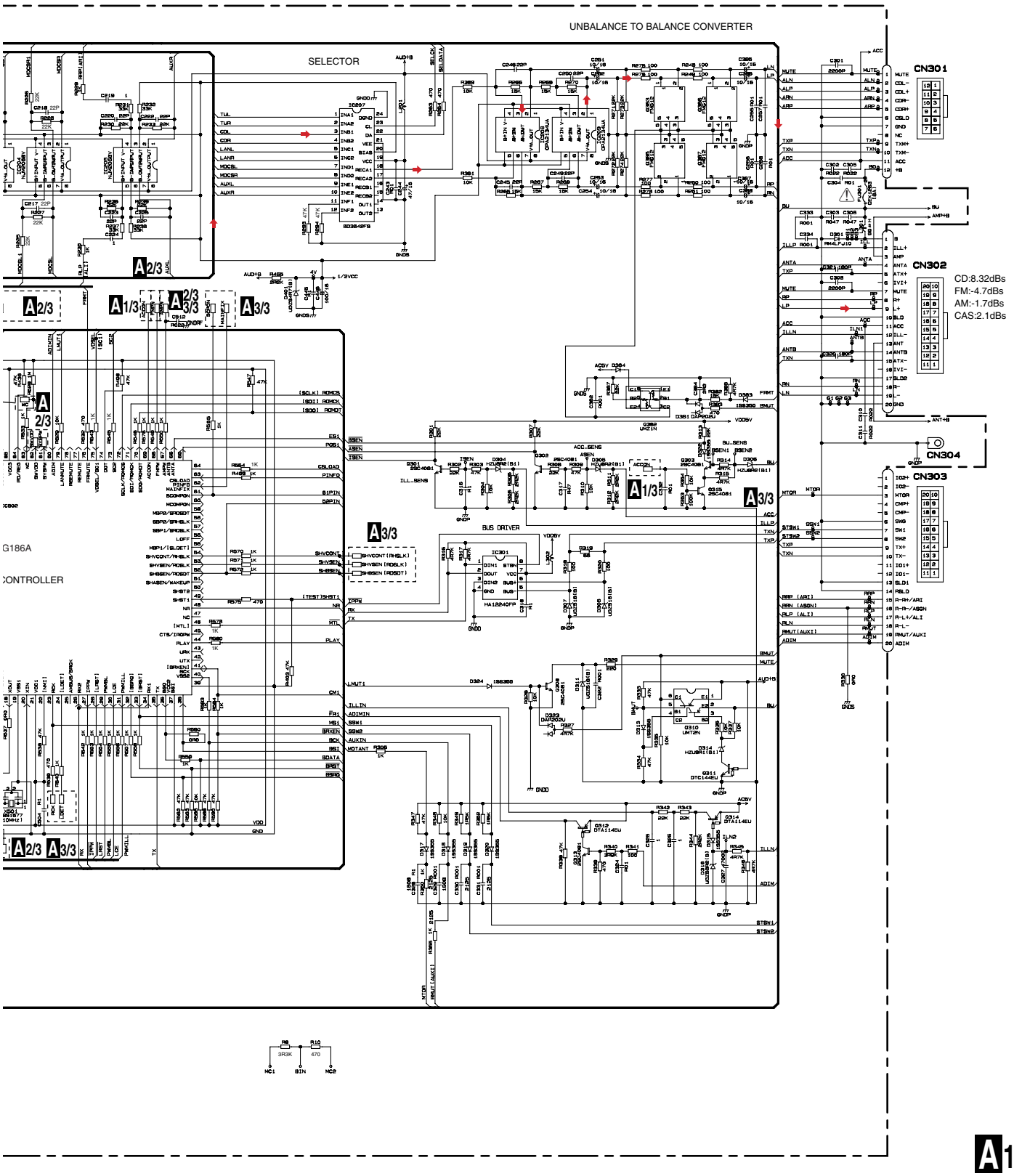
NOTE :
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

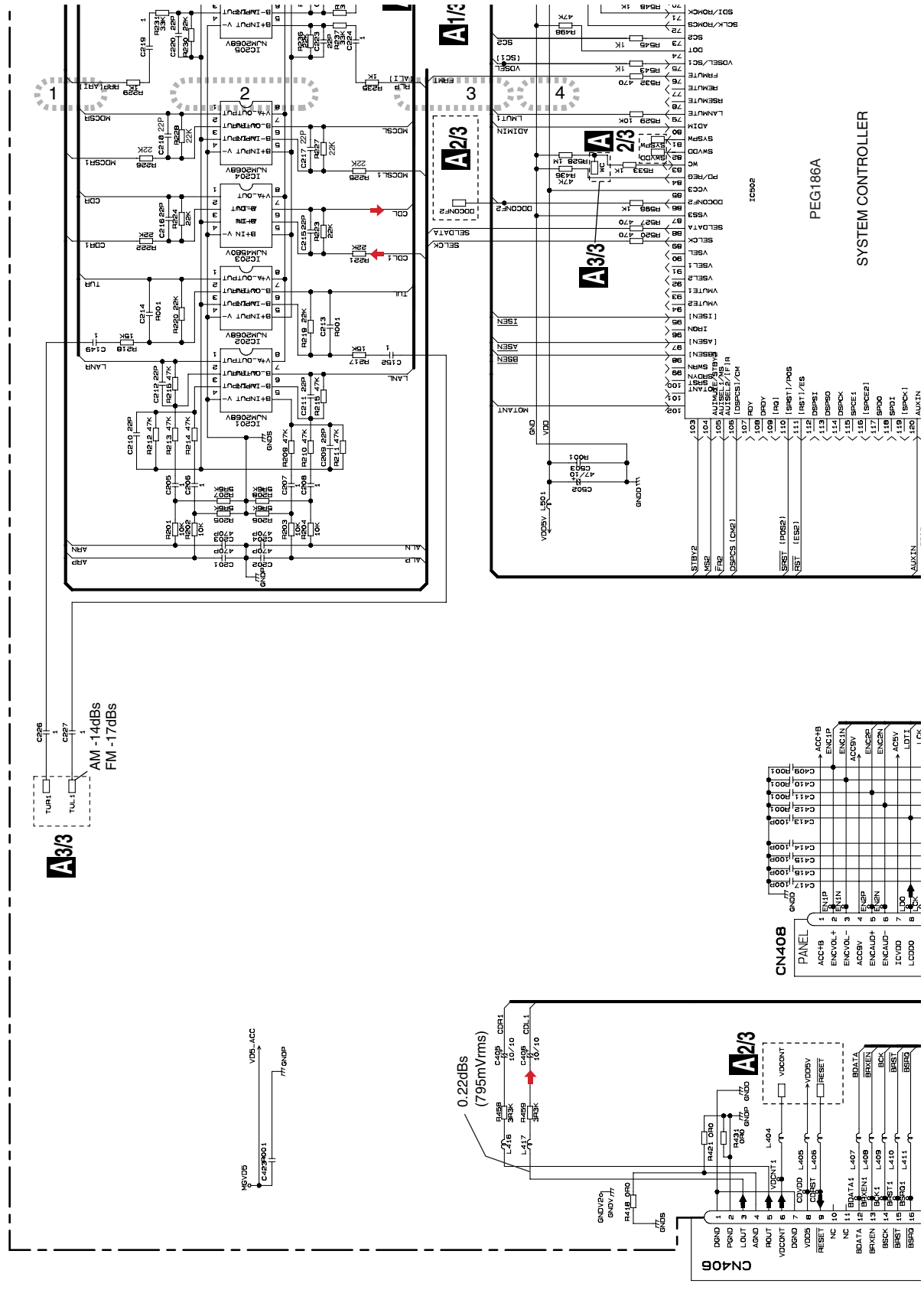
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

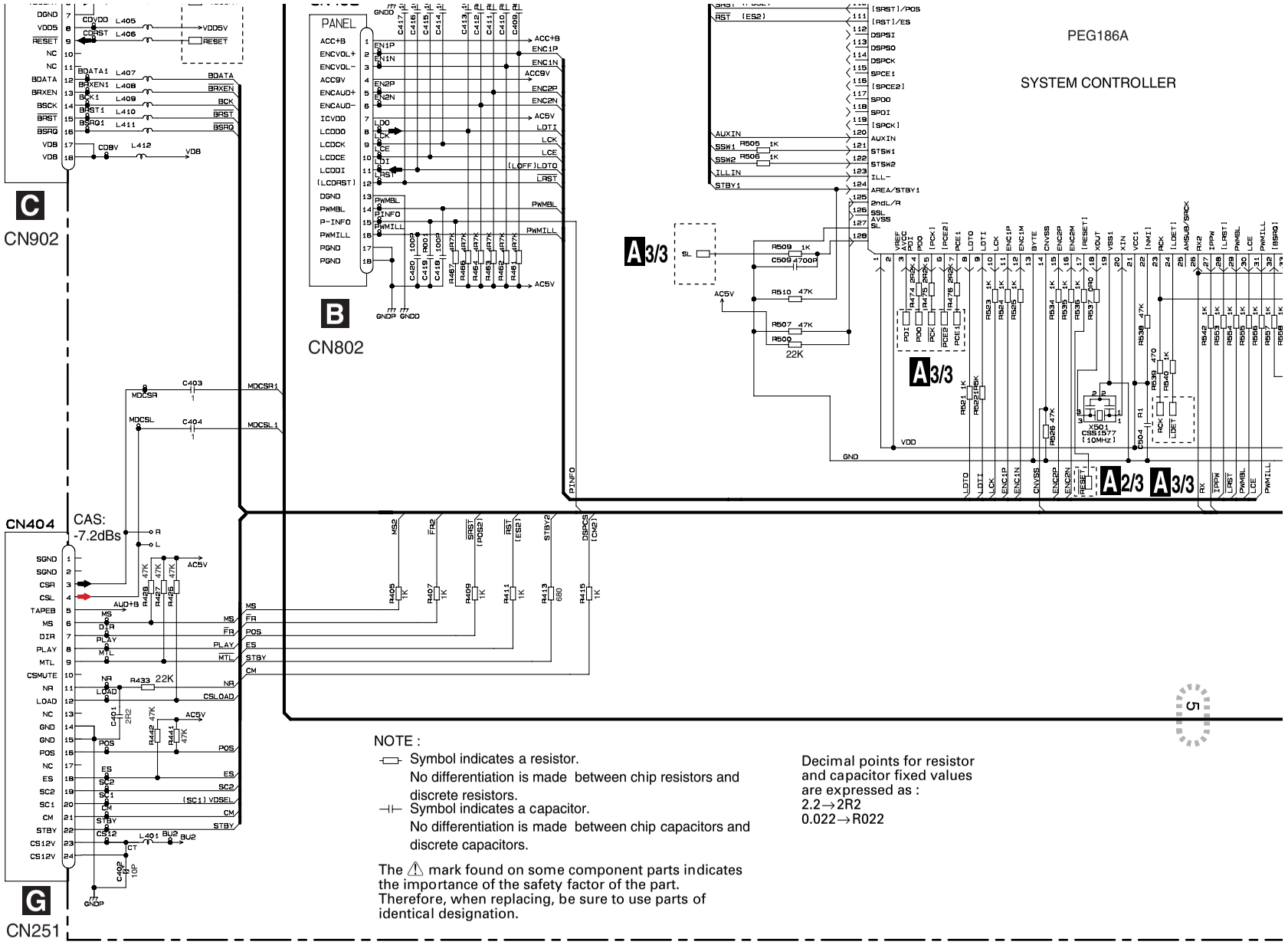
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

A-b 1/3

A1/3 MAIN UNIT(1/3)




SYSTEM CONTROLLER
PEG186A
IC502
A1/3
A2/3
A3/3
AM -14dBs
FM -17dBs
0.22dBs
(795mVrms)
CN408
PANEL
CN406



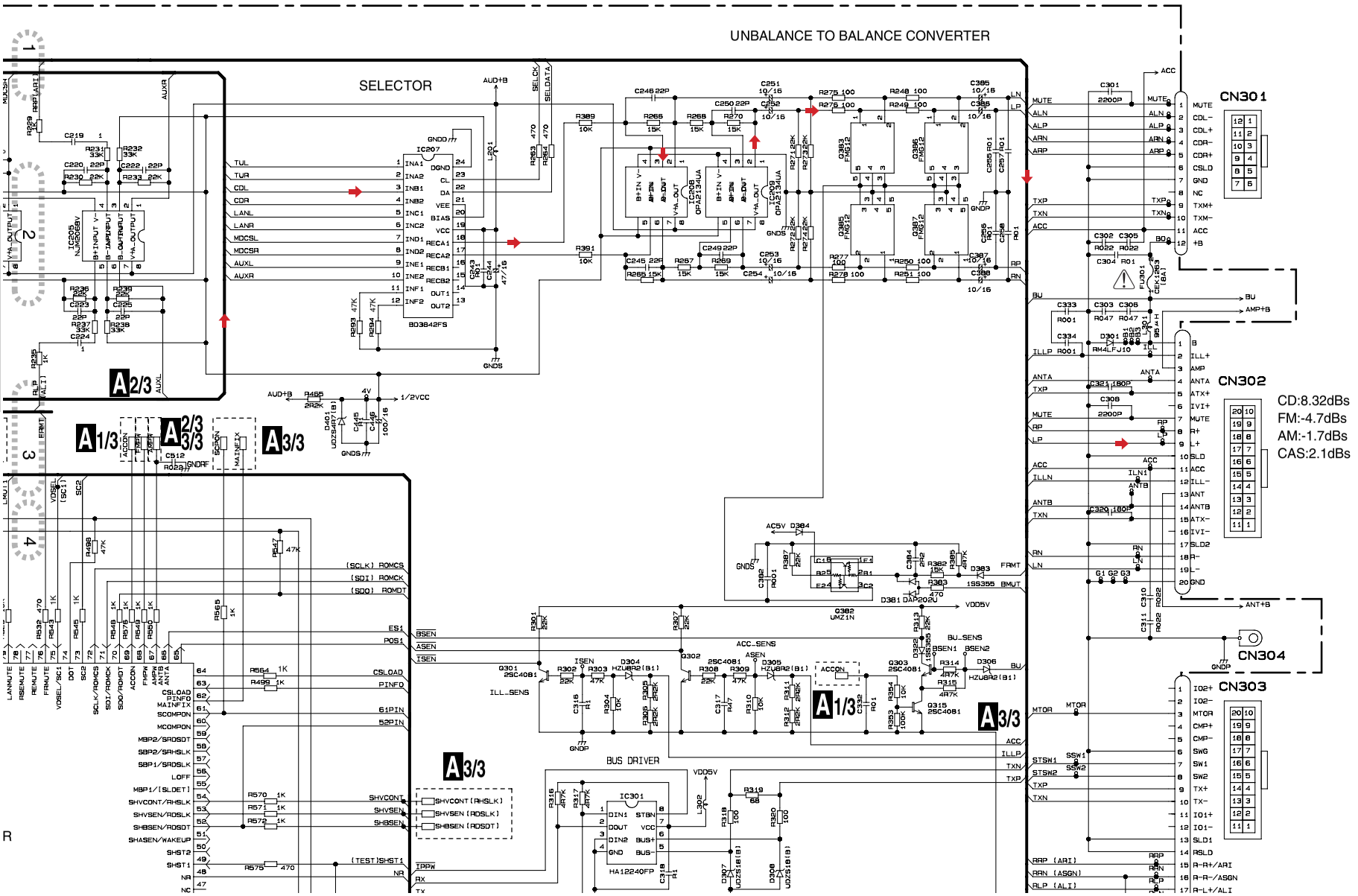
NOTE :

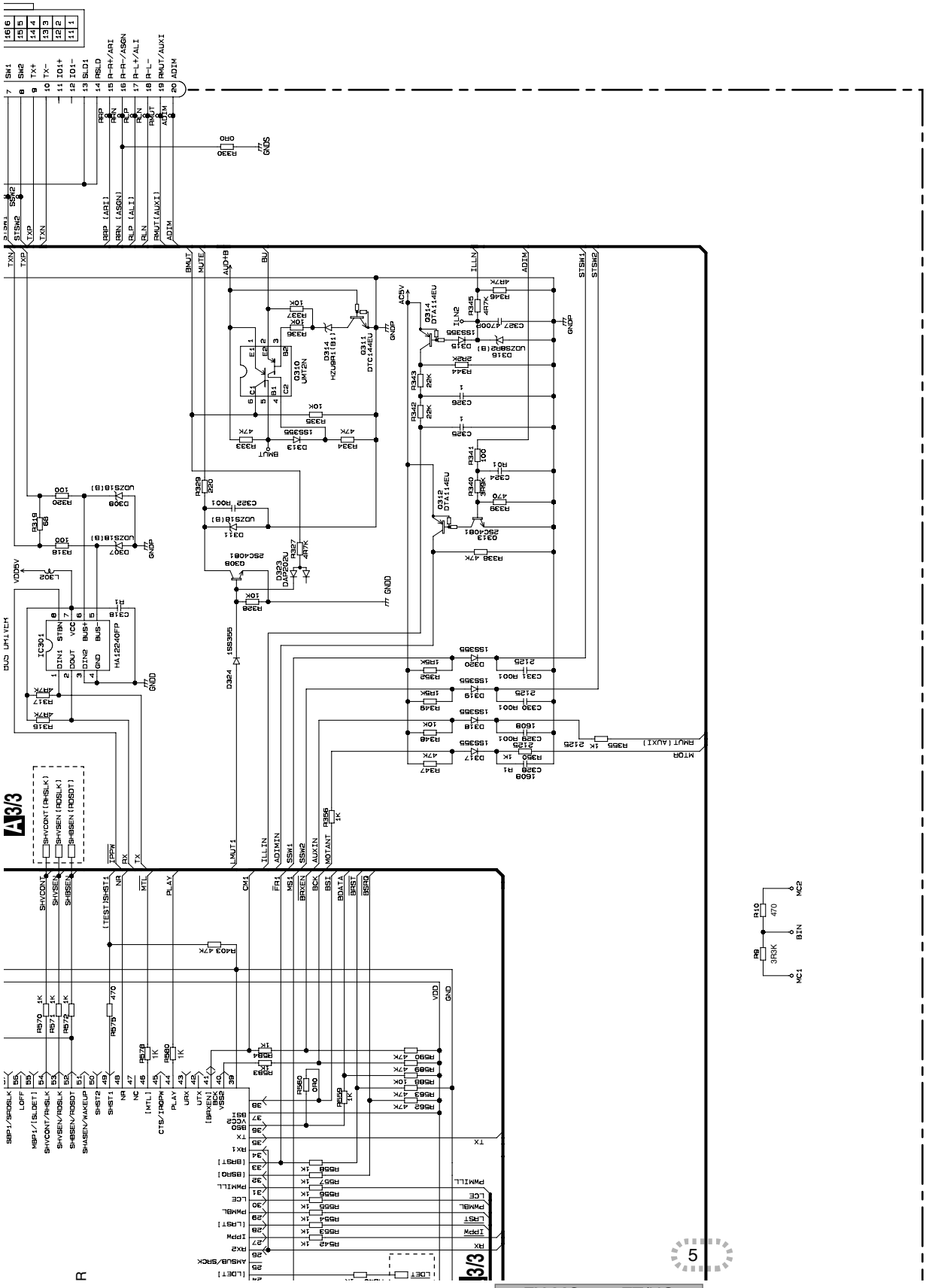
- Symbol indicates a resistor.
  No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor.
  No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

A 1/3 MAIN UNIT(1/3)

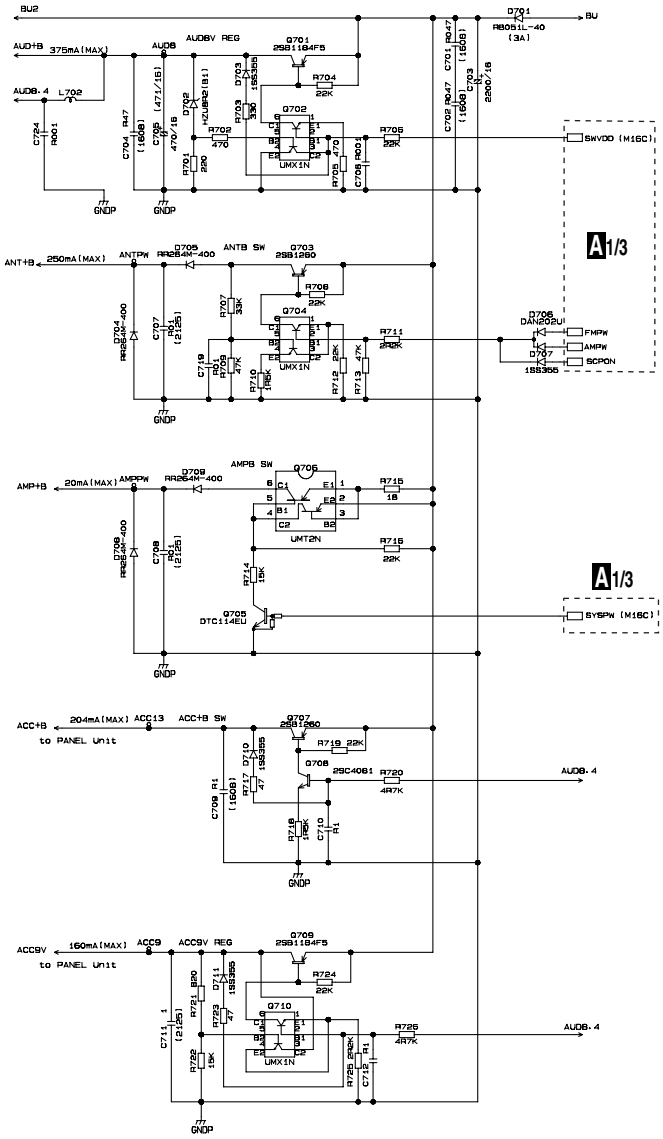




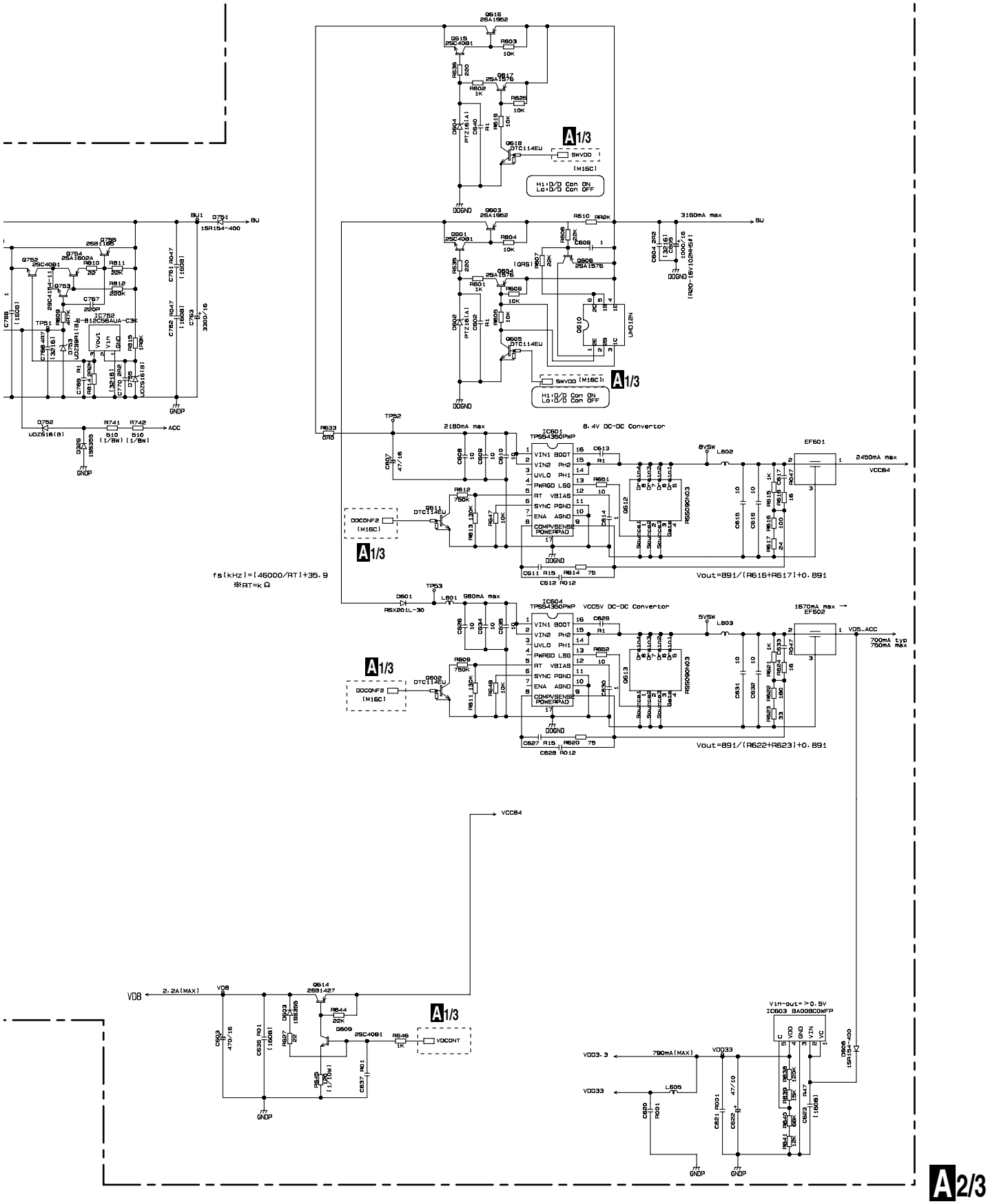
3.3 MAIN UNIT(2/3)(GUIDE PAGE)

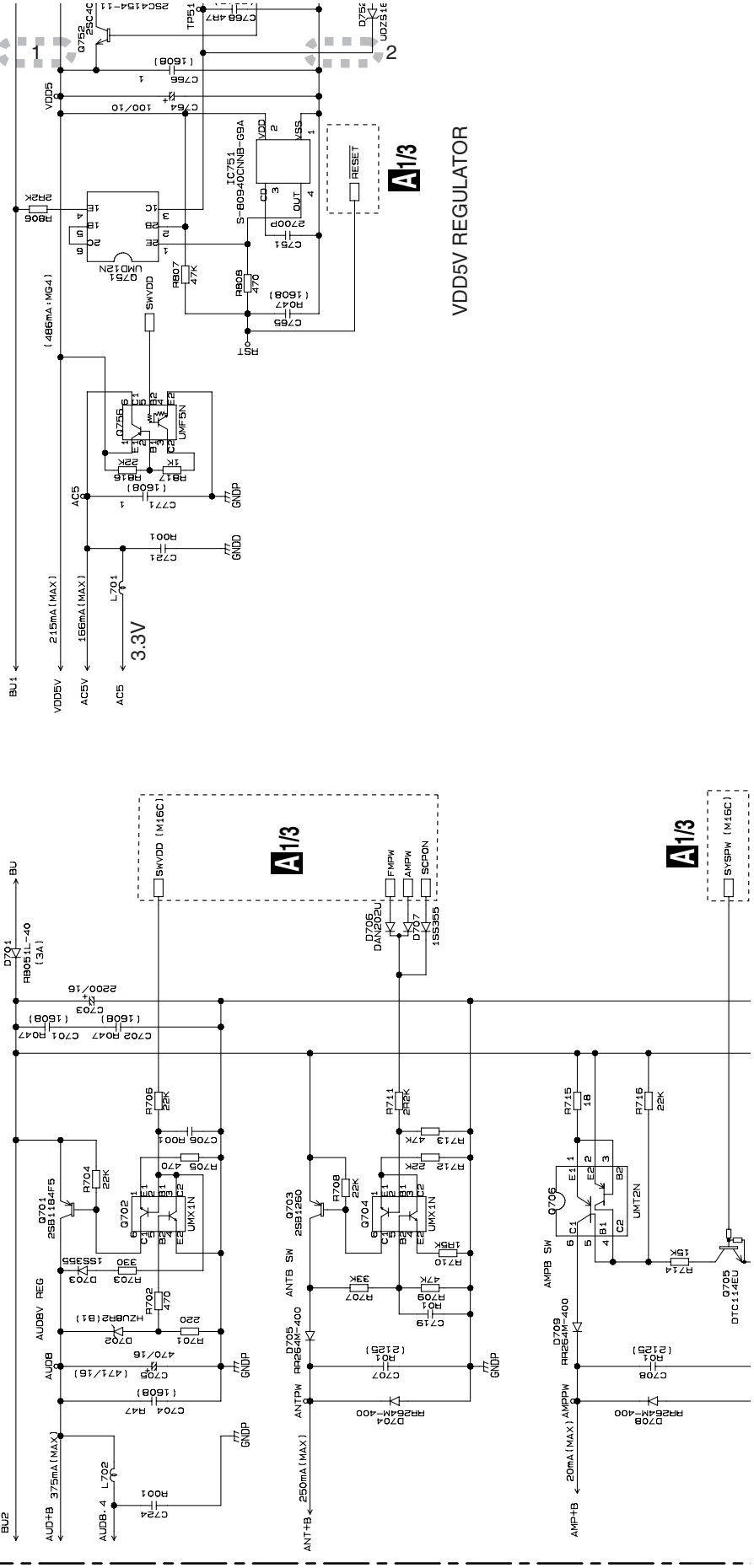
A-a 2/3

A2/3 MAIN UNIT(2/3)



A2/3


A1/3
A1/3
A1/3
A1/3
A1/3
A2/3
8.4V DC-DC Convertor
VCC5V DC-DC Convertor
fs(kHz)=(46000/RT)+35.9
※RT=kΩ
Vout=891/(R615+R617)+0.891
Vout=891/(R622+R623)+0.891
Vin-out=>0.5V
IC603 BA00BC0WFP
2.2A(MAX)
790mA(MAX)
3160mA max
2180mA max
980mA max
1670mA max
2450mA max
700mA typ
750mA max
VCC84
VD8
VDD3.3
VDD33
VD5_ACC
ACC
BU
GNDP
DDGND
SWVDD (M16C)
DDCONF2 (M16C)
VDCONT
H:D/D Con ON
L:D/D Con OFF


VDD5V REGULATOR
A2/3 MAIN UNIT(2/3)
A1/3
A1/3
A1/3
3.3V
SWVDD (M16C)
SYSPW (M16C)
FMPW
AMPW
SCPON
BU1
BU2
VDD5V
AC5V
AC5
AUD8V
AUD+B
AUD8.4
ANT+B
AMP+B
GNDP
RST
SWVDD
AUDBV REG
ANTB SW
AMPB SW
IC751
S-80940CNNB-G9A
Q751
Q752
Q755
Q756
Q701
Q702
Q703
Q704
Q705
Q706
D701
D702
D703
D704
D705
D706
D707
D708
D709
L701
L702
TP51
UMX1N
UMT2N
UMF8N
DTC114EU
RESET
215mA(MAX)
166mA(MAX)
375mA(MAX)
250mA(MAX)
20mA(MAX)
(486mA:MG41)

A

A-b 2/3

B

C

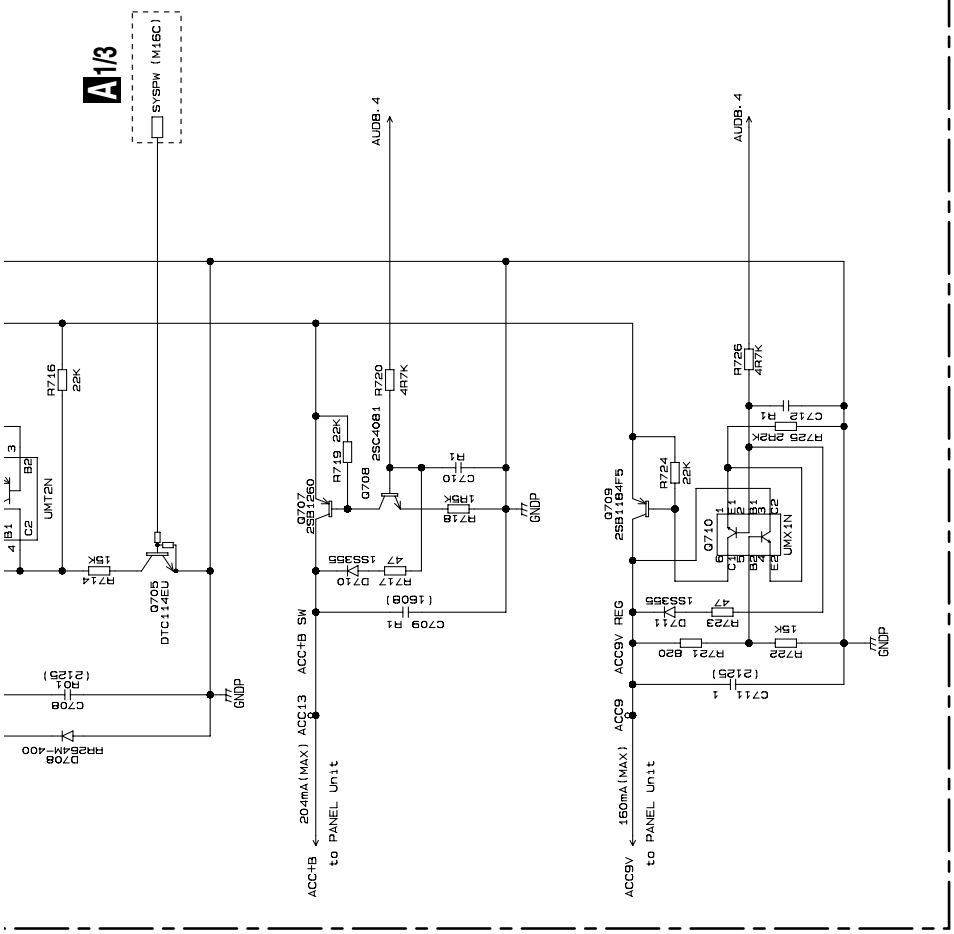
A-b
A-a

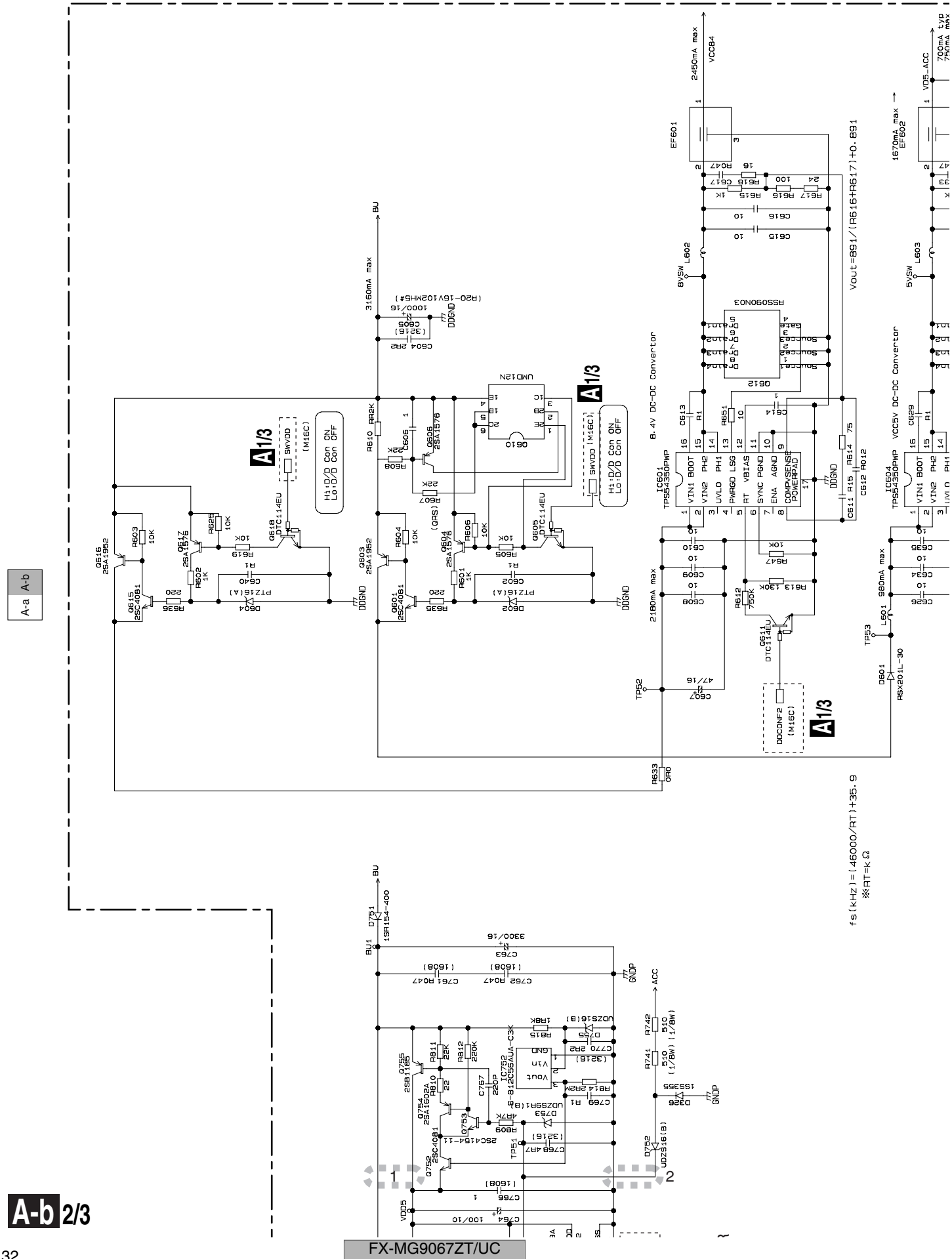
D

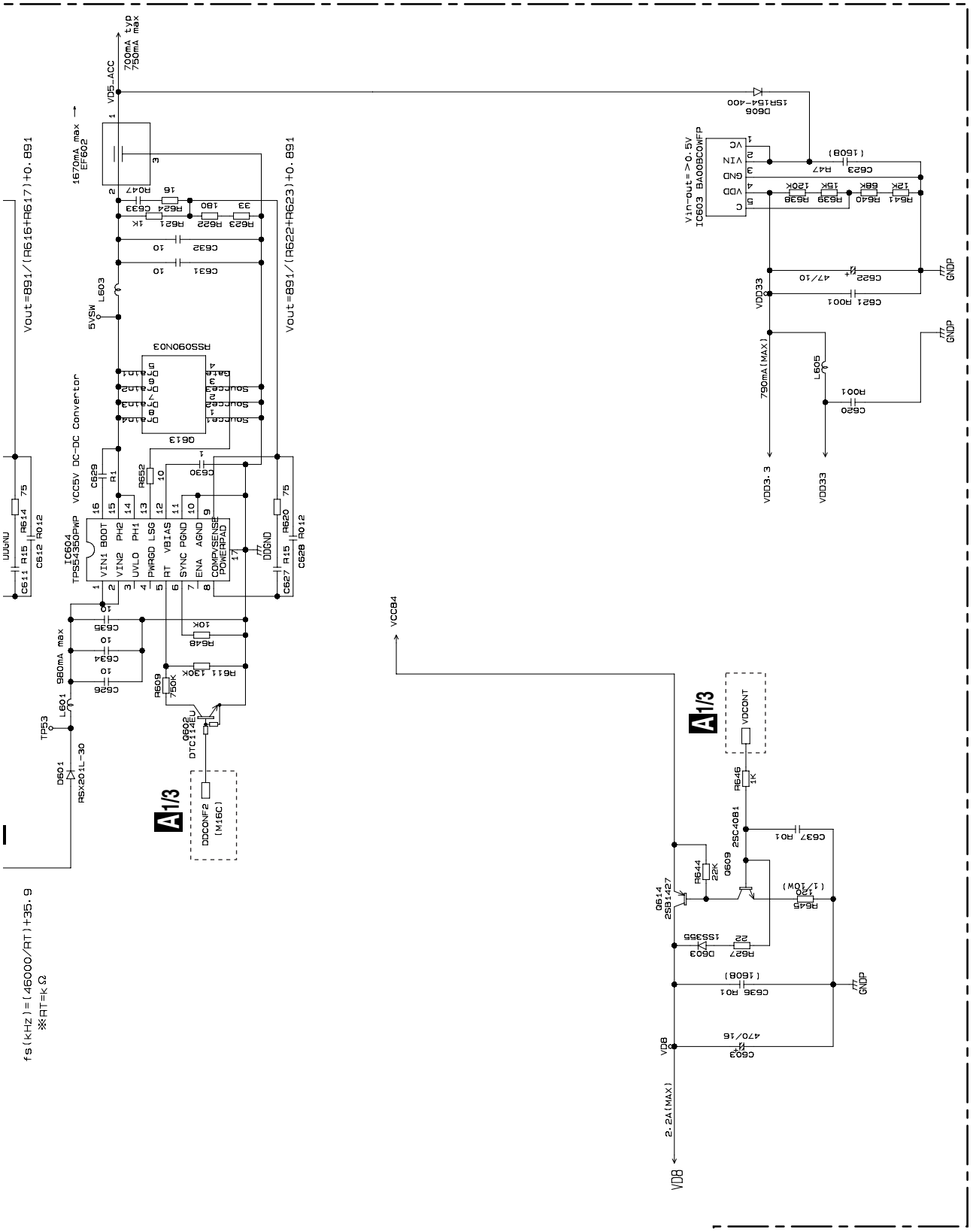
E

F

A-a 2/3




A-b 2/3
A-a A-b
A1/3
A1/3
A1/3
H:D/D Con ON
Lo:D/D Con OFF
H:D/D Con ON
Lo:D/D Con OFF
SWVDD (M16C)
SWVDD (M16C)
DDCONF2 (M16C)
B.4V DC-DC Convertor
VCC5V DC-DC Convertor
IC601 TPS54350PWP
IC604 TPS54350PWP
EF601
EF602
VCC84
VD5_ACC
BVSW
5VSW
L602
L603
L601
RSS090N03
Q612
Vout=891/(R616+R617)+0.891
fs(kHz)=(46000/RT)+35.9
※RT=kΩ
2450mA max
700mA typ
750mA max
1670mA max
2180mA max
980mA max
3150mA max
DDGND
GNDP
ACC
BU
TP52
TP53
TP51
D601
RSX201L-30
Q611 DTC114EU
IC752 S-812C56AUA-C3K
D751 1SR154-400
D752 UDZS16(B)
D753 UDZS9R1(B)
D754 UDZS16(B)
D226 1SS355
Q752 2SA1576
Q753 2SA1576
Q754 2SA1576
Q755 2SB1185
Q755 2SC4081
Q754 2SA1576
Q753
Q752
1
2
FX-MG9067ZT/UC
32

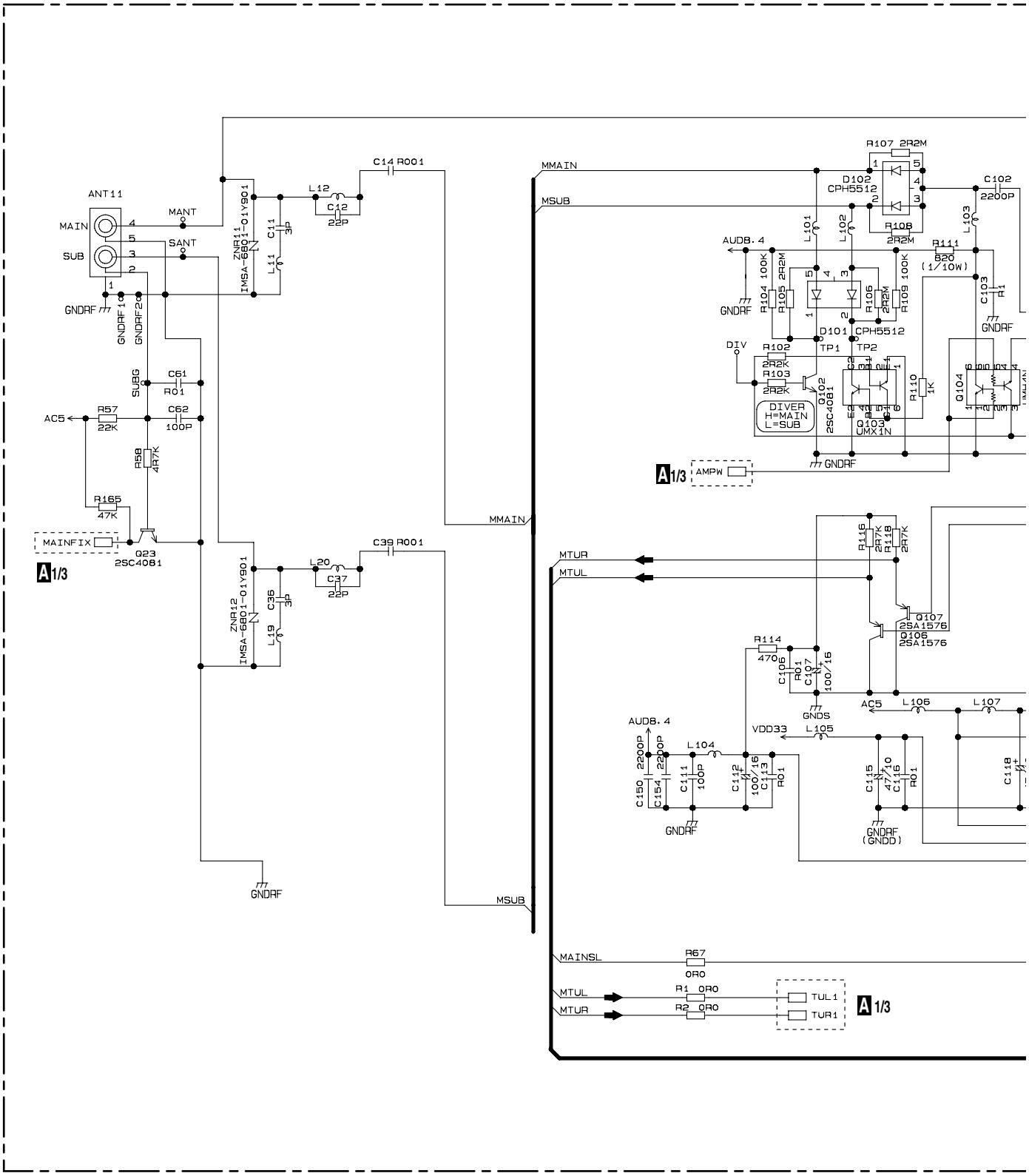

VD5_ACC
700mA typ
750mA max
1670mA max
EF602
Vout=891/(R616+R617)+0.891
Vout=891/(R622+R623)+0.891
5VSW
L603
R0047
R623 R622 R621 R624 C633
33 180 1K 16
C632 10
C631 10
RSS090N03
Q613
IC604
TPS54350PWP
VCC5V DC-DC Converter
VIN1 VIN2 UVLO PWRGD RT
BOOT PH2 PH1 LSG VBIAS
SYNC PGND ENA AGND
COMPVSENSE
POWERPAD
C629 R1
R652 10
C630 1
C611 R15
R614 75
C612 R012
C627 R15
R620 75
C628 R012
UUGNU
DDGND
C635 1
C634 10
C626 10
980mA max
L601
TP53
D601
RSX201L-30
R609 750K
R611 130K
R648 10K
Q602
DTC114EU
DDCONF2
(M16C)
A1/3
fs(kHz)=(46000/RT)+35.9
※RT=kΩ
VCC84
A1/3
VDCONT
R646 1K
2SC4081
Q609
C637 R01
R644 22K
Q614
2SB1427
R645 120 (1/10W)
R627 22
D603
1SS355
C636 R01 (160B)
GNDP
C603 470/16
VDB
2.2A(MAX)
VDB
D606
1SR154-400
Vin-out=>0.5V
IC603 BA00BC0WFP
VC VIN GND VDD C
C623 R47 (160B)
R641 12K
R640 68K
R639 15K
R638 120K
C622 47/10
C621 R001
VDD33
GNDP
750mA(MAX)
L605
R001
C620
VDD3.3
VDD33

A-a A-b

A-b 2/3

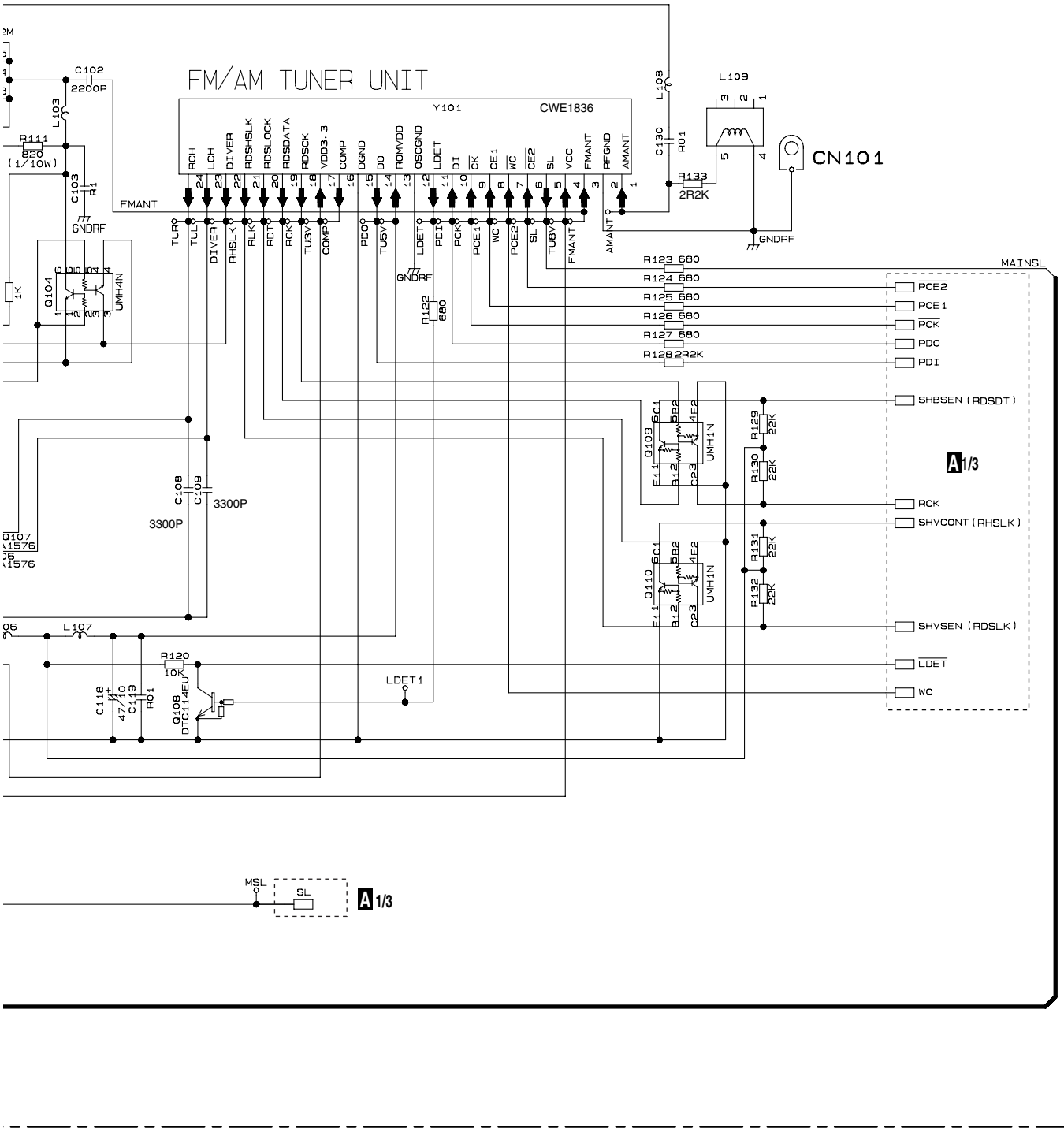
3.4 MAIN UNIT(3/3)

A-a 3/3

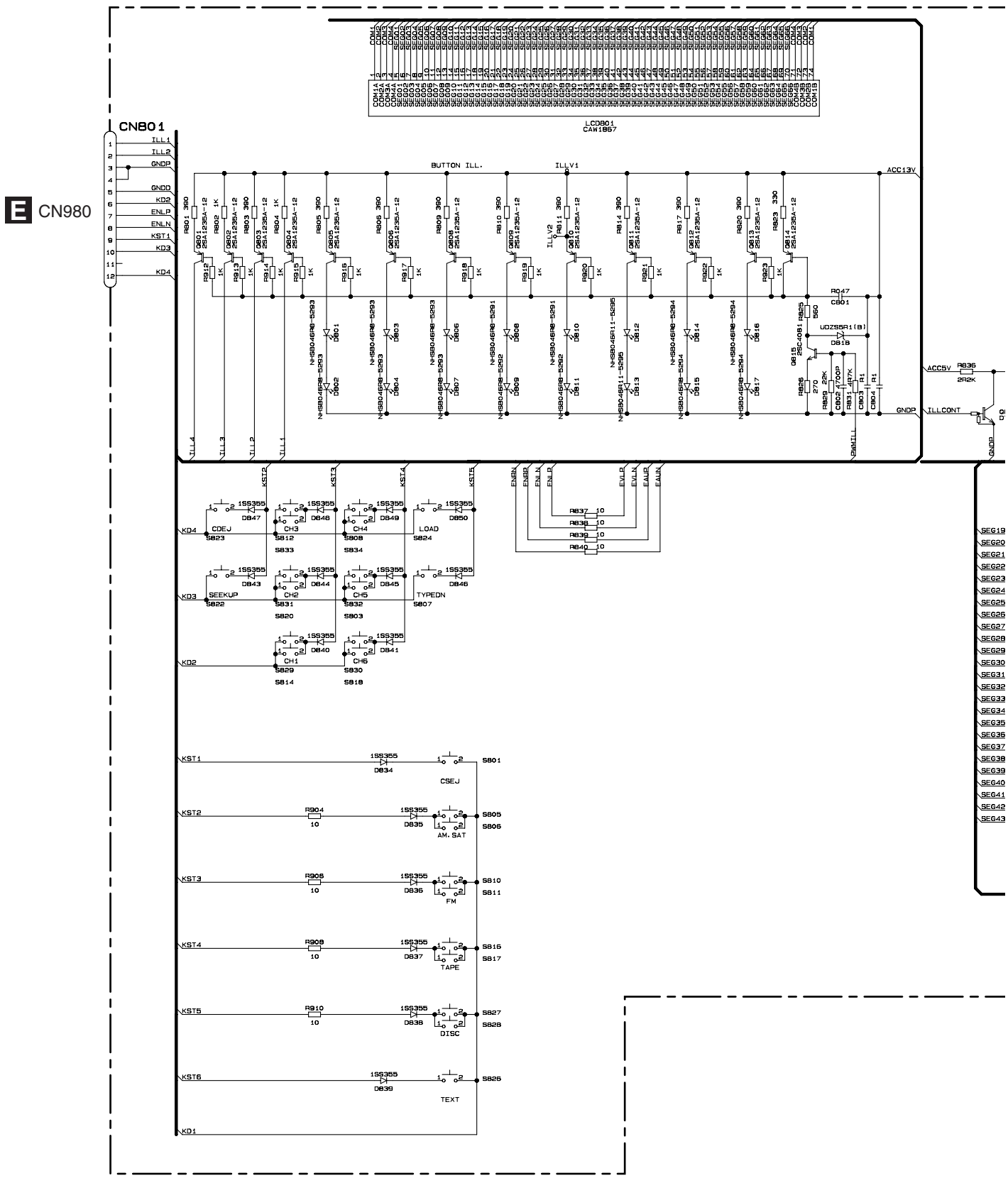


A3/3

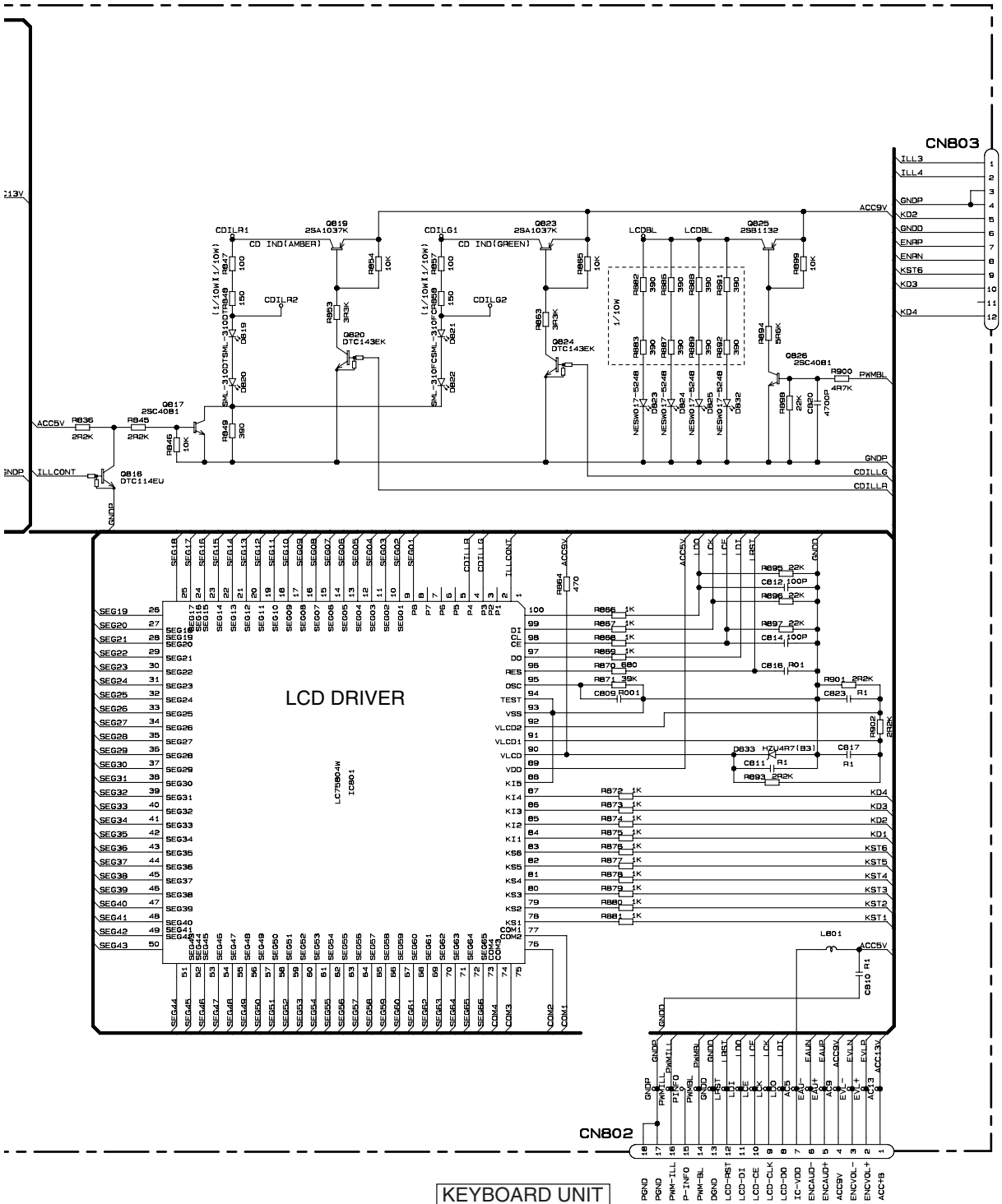
A3/3 MAIN UNIT(3/3)



3.5 KEYBOARD PCB



B KEYBOARD PCB



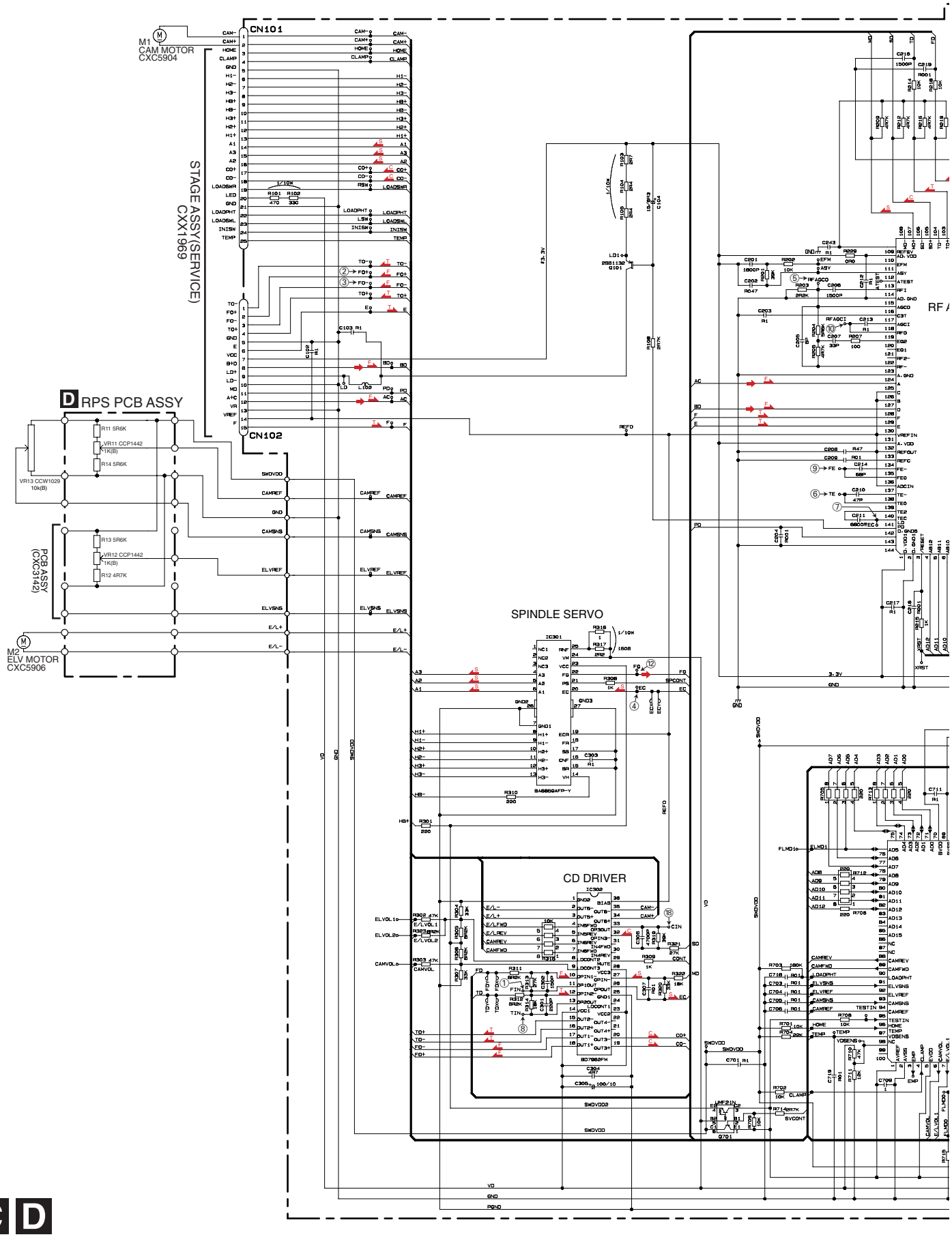
F CN990

A1/3 CN408

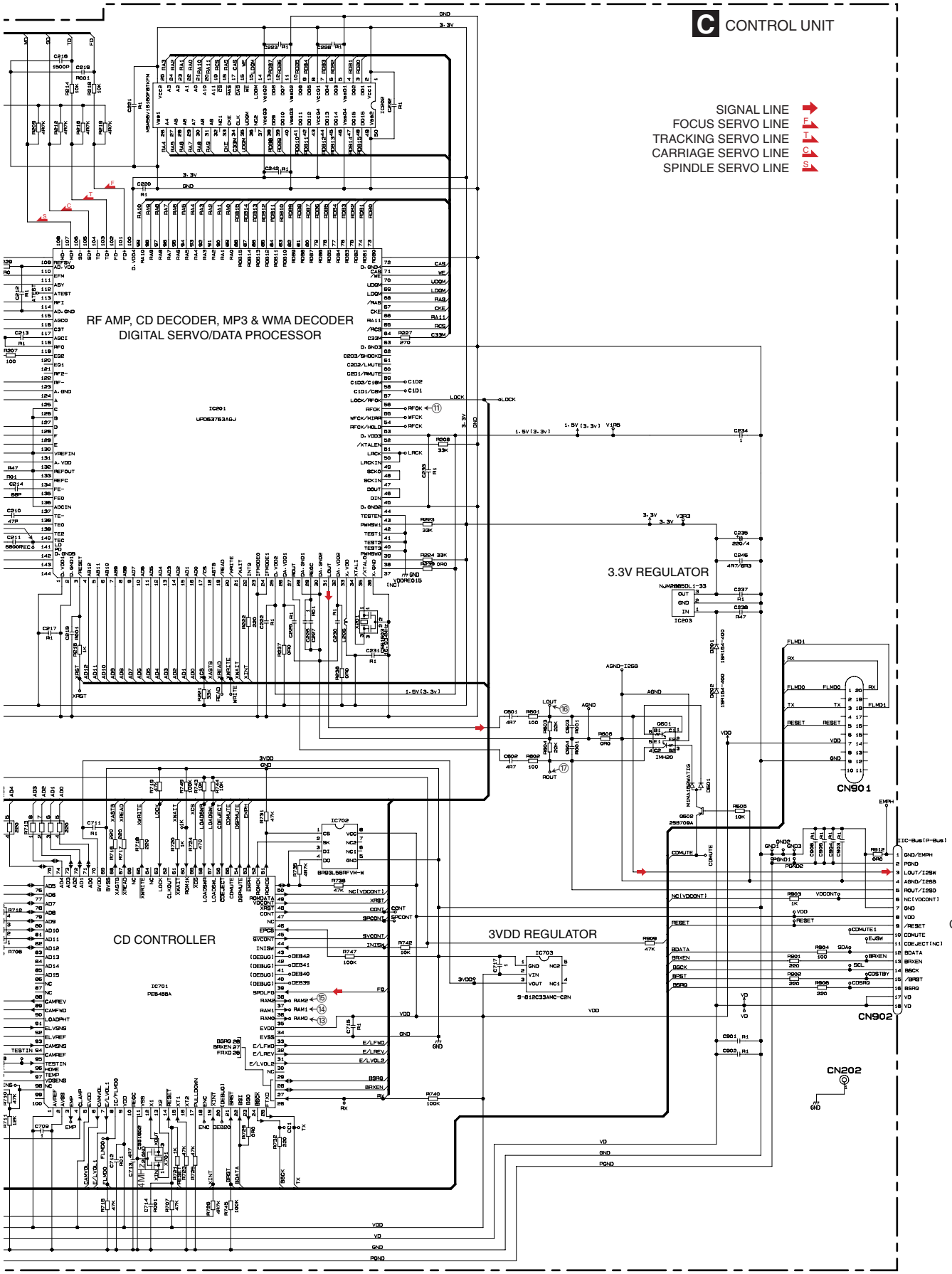
KEYBOARD UNIT
Consists of
KEYBOARD PCB
L PCB
R PCB

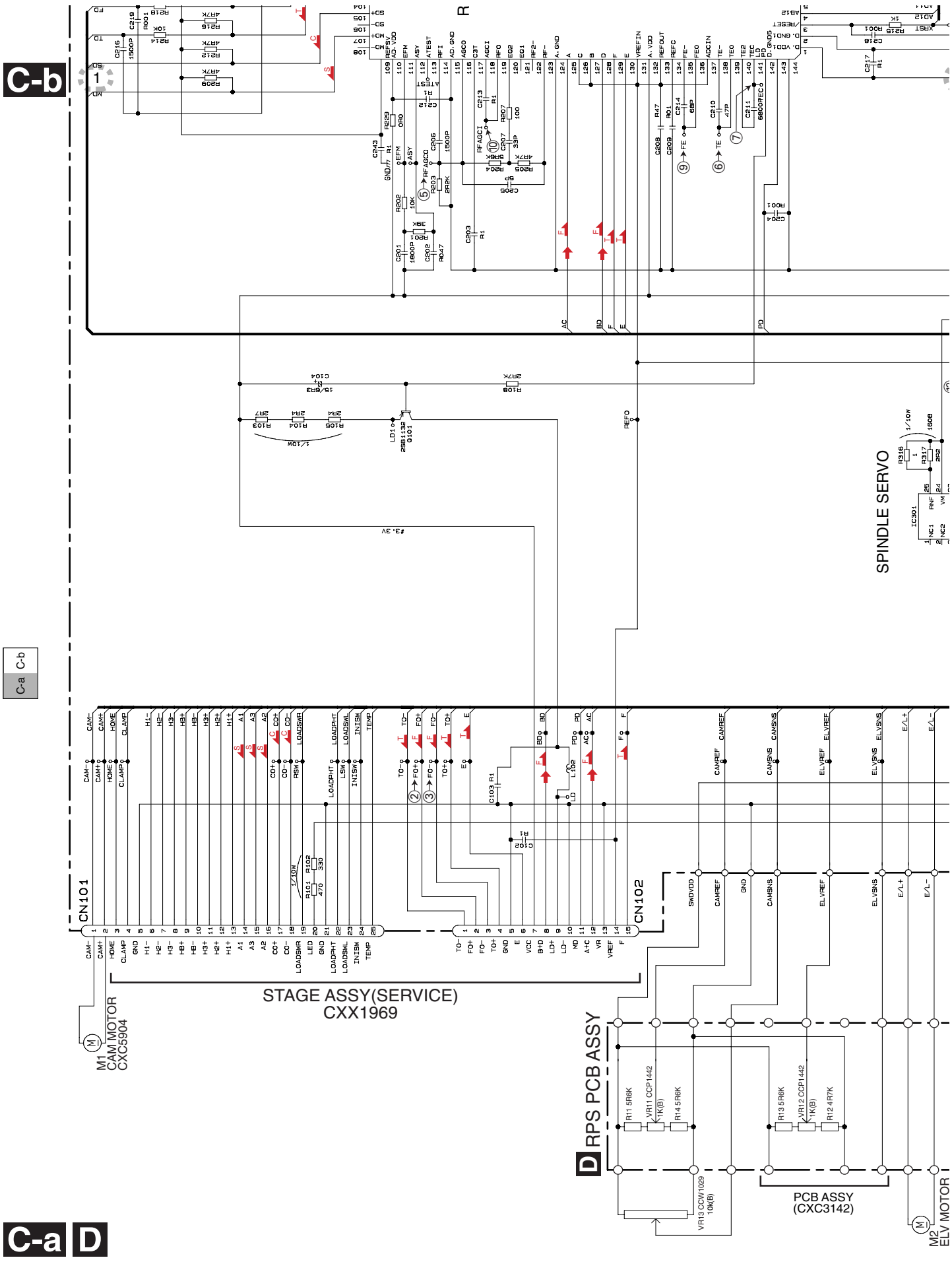
3.6 CD MECHANISM MODULE(GUIDE PAGE)

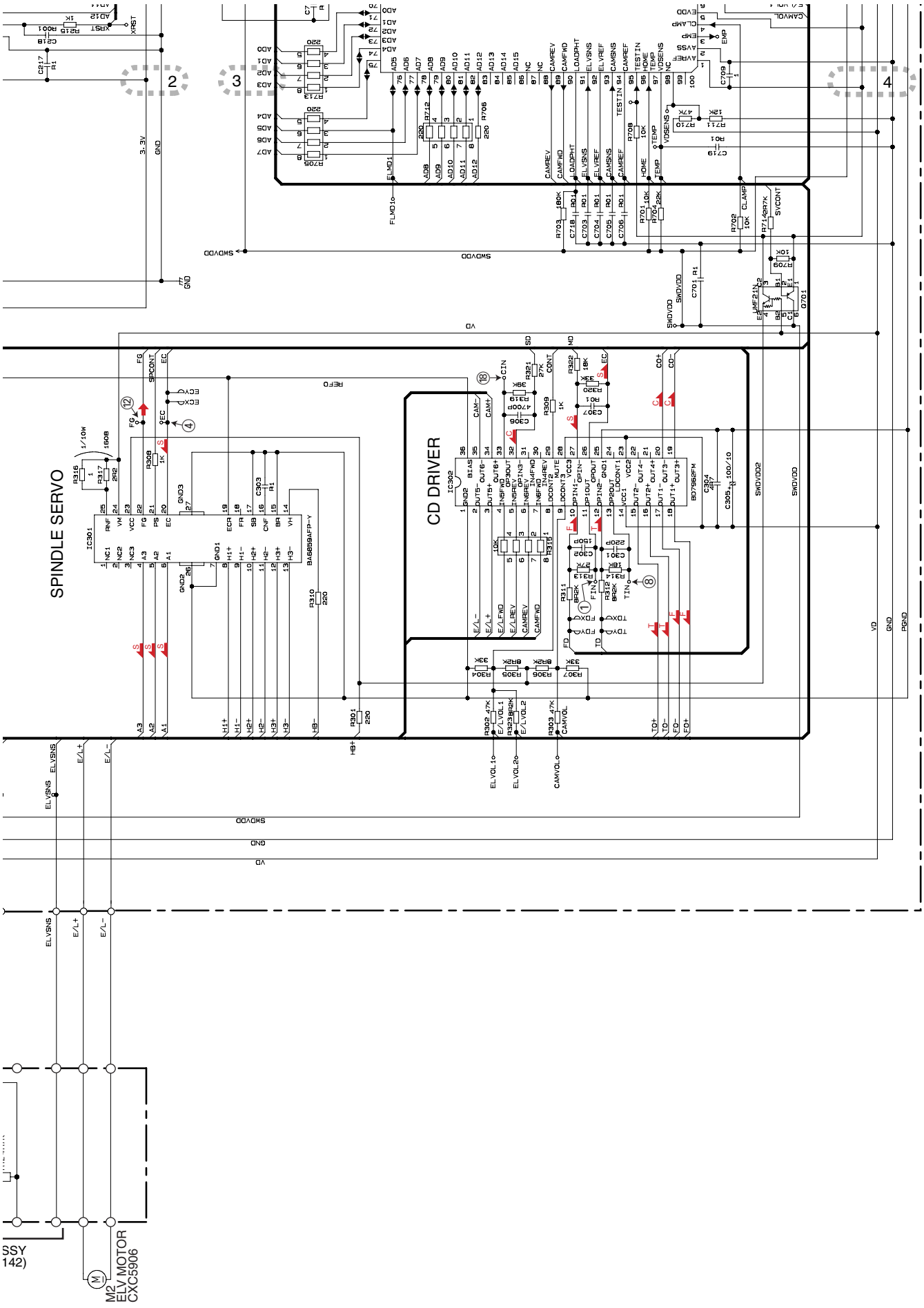
C-a



C D


C CONTROL UNIT
SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE
RF AMP, CD DECODER, MP3 & WMA DECODER
DIGITAL SERVO/DATA PROCESSOR
IC201
UPD63753AGJ
3.3V REGULATOR
NJM2885DL1-33
IC203
3VDD REGULATOR
S-812C33AMC-C2N
IC703
CD CONTROLLER
IC701
PE5488A
IC702
BR93L56RFVM-W
CN901
CN902
CN202
A1/3
CN406
3.3V
GND
VDD
VD
PGND
AGND
LOCK
RFOK
WFCK
XRST
XWAIT
XWRITE
XREAD
FLMD1
FLMD0
TX
RX
RESET
EMPH
CMUTE
SDAO
SCL
BDATA
BRXEN
BSCK
/BRST
BSRQ
CDSTBY
CDSRQ


C-b
C-a C-b
C-a D
SPINDLE SERVO
CN101
CN102
STAGE ASSY(SERVICE)
CXX1969
M1
CAM MOTOR
CXC5904
D RPS PCB ASSY
PCB ASSY
(CXC3142)
M2
ELV MOTOR


SPINDLE SERVO
CD DRIVER
C-b
C-a
M2
ELV MOTOR
CXC5906

C CONTROL UNIT

SIGNAL LINE
FOCUS SERVO LINE
TRACKING SERVO LINE
CARRIAGE SERVO LINE
SPINDLE SERVO LINE

RF AMP, CD DECODER, MP3 & WMA DECODER
DIGITAL SERVO/DATA PROCESSOR

IC201
UPD63763AGJ

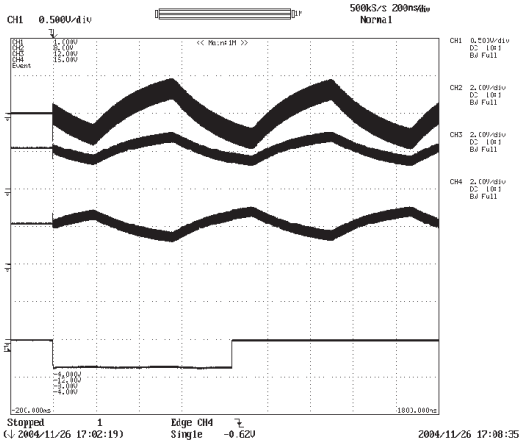
3.3V REGULATOR

A1/3
CN406
CN901
CN902
CN202
3VDD REGULATOR
CD CONTROLLER
IC703
S-812C33AMC-C2N
IC702
BR93L56RFVM-W
IC701
PE5455A
4MHz
1.5V(3.3v)
C-a C-b
C-b
FX-MG9067ZT/UC
43

● Waveforms

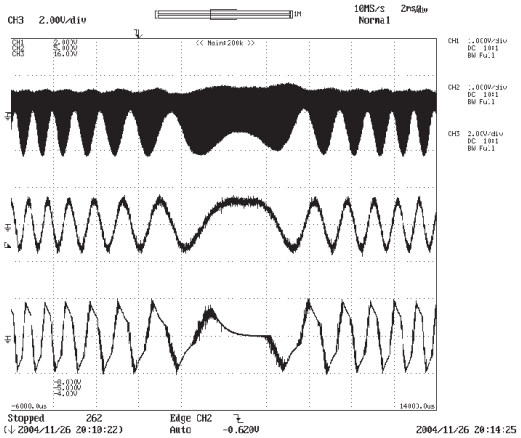
Note: The encircled numbers denote measuring points in the circuit diagram.

CH1 : ① FIN Mode:Test
CH2 : ② FO+
CH3 : ③ FO-
CH4 : ④ EC
Focus search mode

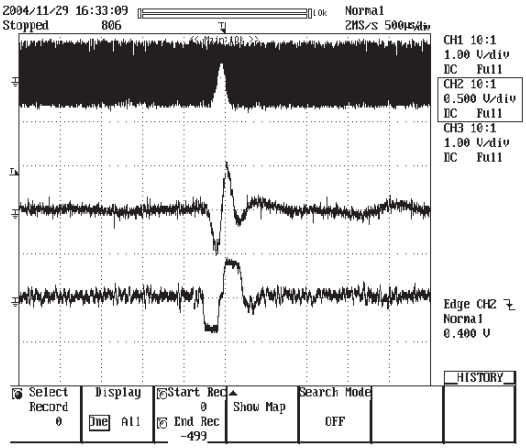


CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE
CH3 : ⑦ TEC

Tracking open

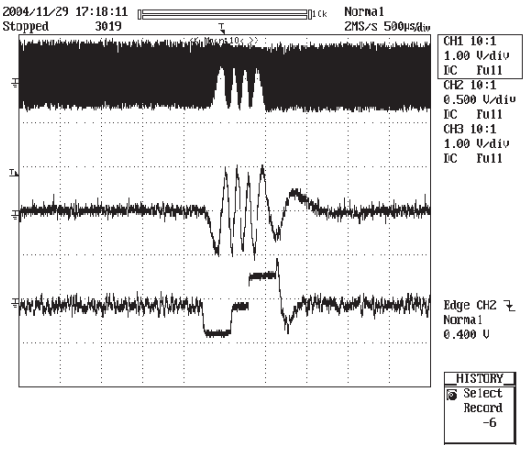


CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE
CH3 : ⑧ TIN
1 Track Jump



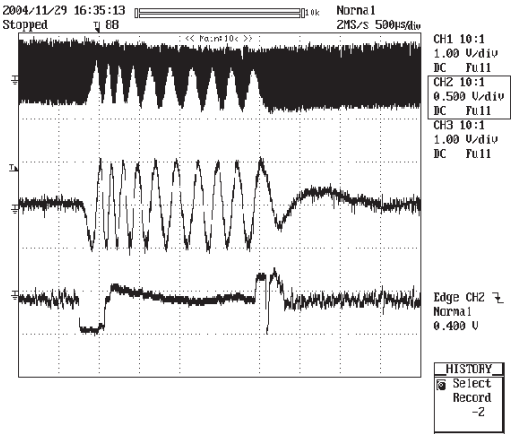
CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE
CH3 : ⑧ TIN

4 Track Jump



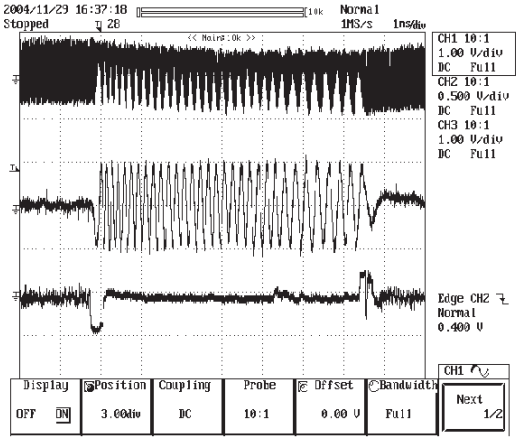
CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE
CH3 : ⑧ TIN

10 Track Jump



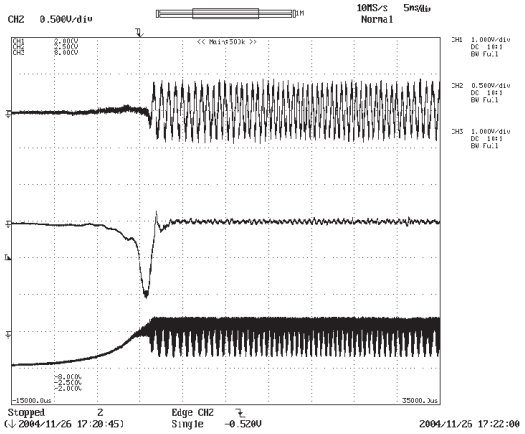
CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE
CH3 : ⑧ TIN

32 Track Jump

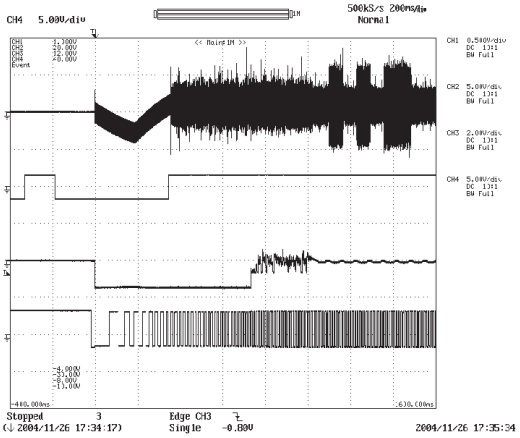


CH1 : ⑥ TE Mode:Test
CH2 : ⑨ FE
CH3 : ⑩ RFAGCI

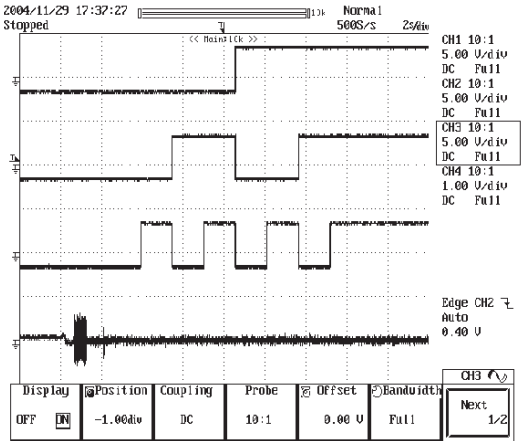
Focus close



CH1 : ① FIN Mode:Test
CH2 : ⑪ RFOK
CH3 : ④ EC
CH3 : ⑫ FG
Setup

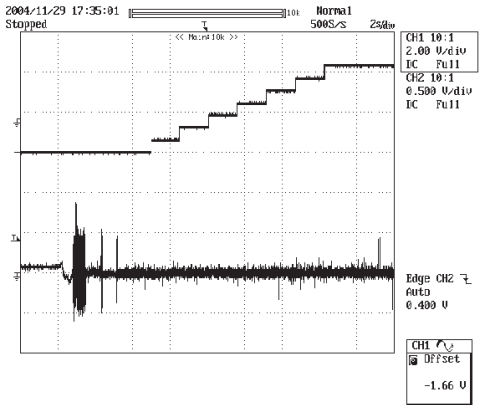


CH1 : ⑬ RAM0 Mode:Test
CH2 : ⑭ RAM1
CH3 : ⑮ RAM2
CH4 : ⑥ TE
Memory capacity(remaining)during PLAY

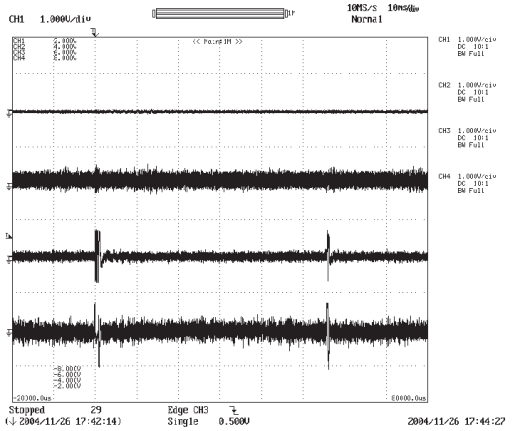


CH1 : ⑤ RFAGCO Mode:Test
CH2 : ⑥ TE

Memory capacity(remaining)during PLAY(with jig)
*About the usage of jig, refer to Fig. 1.

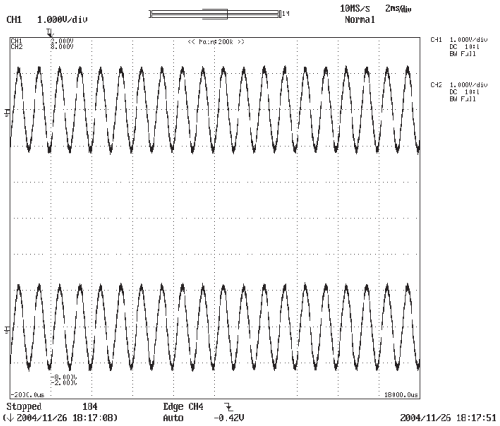


CH1 : ⑨ FE Mode:Test
CH2 : ① FIN
CH3 : ⑥ TE
CH4 : ⑧ TIN
During"Play"

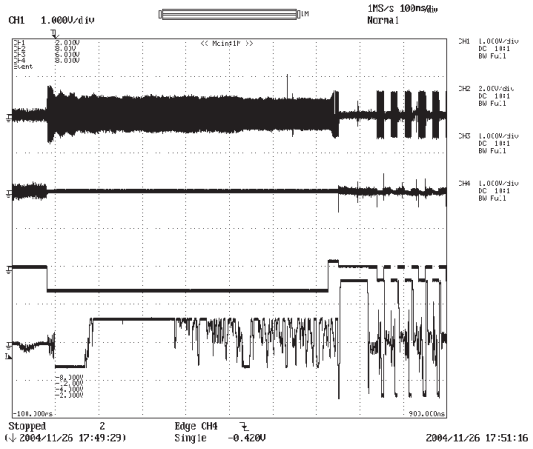


CH1 : ⑯ LOUT Mode:Test
CH2 : ⑰ ROUT

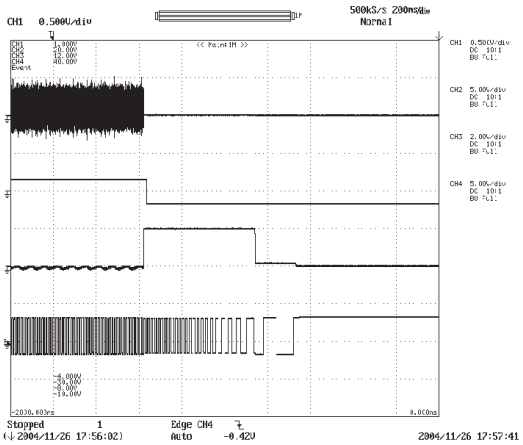
Audio output(1kHz,0dB)



CH1 : ⑥ TE Mode:Test
CH2 : ⑧ TIN
CH3 : ⑱ CIN
CH4 : ④ EC
During inside/outside search



CH1 : ① FIN Mode:Test
CH2 : ⑪ RFOK
CH3 : ⑭ EC
CH3 : ⑫ FG
DISC stop



*note
RAM memory usage monitoring function

The memory usage within the RAM can be monitored by tracking the voltage levels at the test points, RAM0,RAM1,RAM2, on the PCB.
Divide the total volume of the RAM by 7, and express the memory usage in 3 bits (3 binary digits), RAM0,RAM1,RAM2. The RAM0 indicates the least significant bit. If then the combination of the voltage levels measured at the RAM0,RAM1,RAM2 is converted to an octal number, X (Oct), the memory usage within the RAM should be expressed by "X (Oct) / 7".
It is also possible to measure the memory usage within the RAM in voltage (appx 5V at max), by adding the R/2R ladder resistance circuit detailed in the diagram on the right.

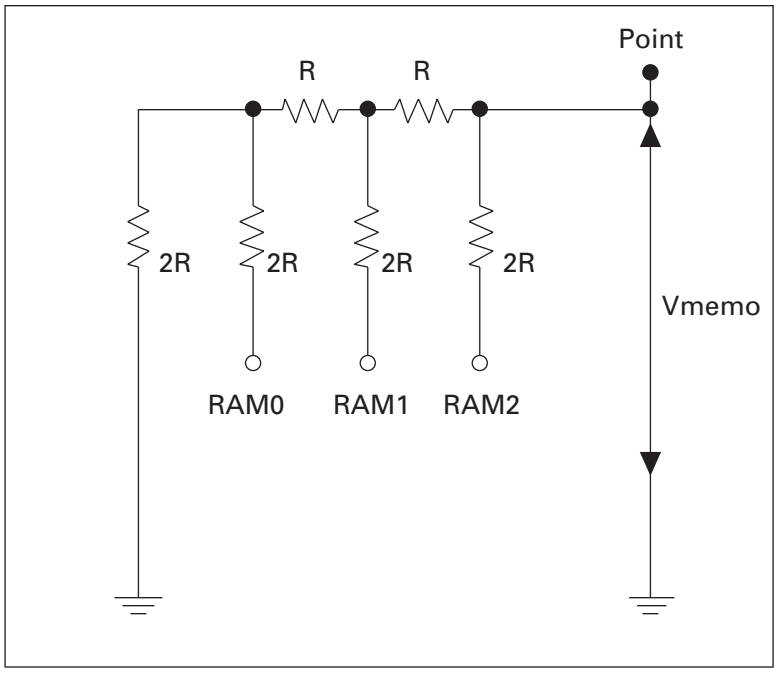


Fig.1

Main Unit(CN408)<->Keyboard Unit(CN802)

Pin No	Main Unit	Keyboard Unit	Pin No
1	ACC+B	ACC+B	1
2	ENCVOL+	ENCVOL+	2
3	ENCVOL-	ENCVOL-	3
4	ACC9V	ACC9V	4
5	ENCAUD+	ENCAUD+	5
6	ENCAUD-	ENCAUD-	6
7	ICVDD	IC-VDD	7
8	LCDDO	LCD-DO	8
9	LCDCK	LCD-CLK	9
10	LCDCE	LCD-CE	10
11	LCDDI	LCD-DI	11
12	(LCDRST)	LCD-RST	12
13	DGND	DGND	13
14	PWLBL	PWM-BL	14
15	P-INFO	P-INFO	15
16	PWMILL	PWM-ILL	16
17	PGND	PGND	17
18	PGND	PGND	18

Main Unit(CN406)<->G3 Mech.(CN902

PinNo	Main Unit	G3 Mech.	Pin No
1	DGND	GND	1
2	PGND	PGND	2
3	LOUT	LOUT	3
4	AGND	AGND	4
5	ROUT	ROUT	5
6	VDCONT	VDCONT	6
7	DGND	GND	7
8	VDD5	VDD	8
9	RESET	/RESET	9
10	NC	NC	10
11	NC	NC	11
12	BDATA	BDATA	12
13	BRXEN	BRXEN	13
14	BSCK	BSCK	14
15	BRST	/BRST	15
16	BSRQ	/BSRQ	16
17	VD8	VD	17
18	VD8	VD	18

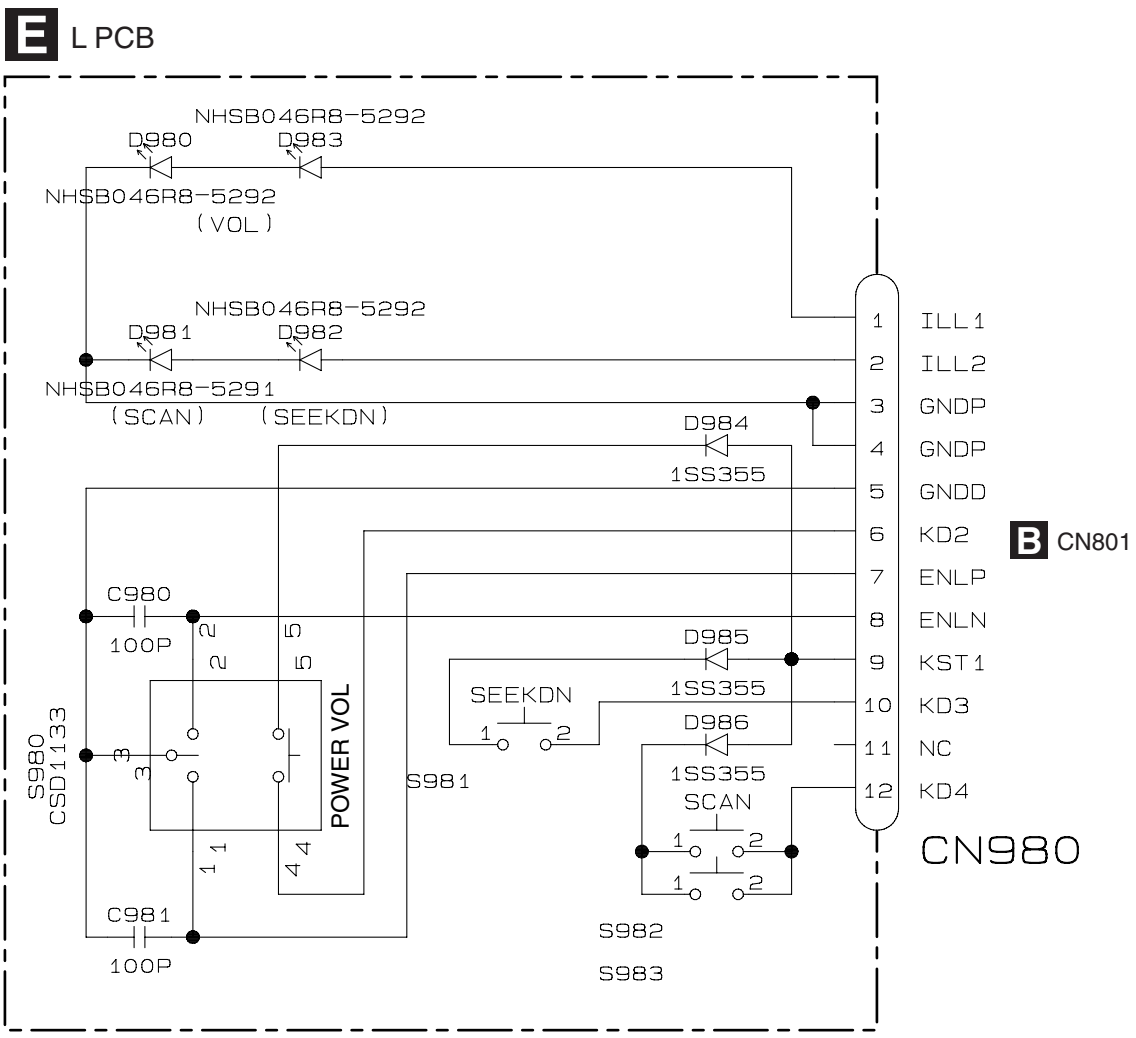
Keyboard Unit(CN801)<->LEFT PCB(CN980)

Pin No	Keyboard Unit	Left PCB	Pin No
1	ILL1	ILL1	1
2	ILL2	ILL2	2
3	GNDP	GNDP	3
4	GNDP	GNDP	4
5	GNDD	GNDD	5
6	KD2	KD2	6
7	ENLP	ENLP	7
8	ENLN	ENLN	8
9	KST1	KST1	9
10	KD3	KD3	10
11	NC	NC	11
12	KD4	KD4	12

Keyboard Unit(CN803)<->RIGHT PCB(CN990)

Pin No	Keyboard Unit	Right PCB	Pin No
1	ILL3	ILL3	1
2	ILL4	ILL4	2
3	GNDP	GNDP	3
4	GNDP	GNDP	4
5	KD2	KD2	5
6	GNDD	GNDD	6
7	ENRP	ENRP	7
8	ENRN	ENRN	8
9	KST6	KST6	9
10	KD3	KD3	10
11	NC	NC	11
12	KD4	KD4	12

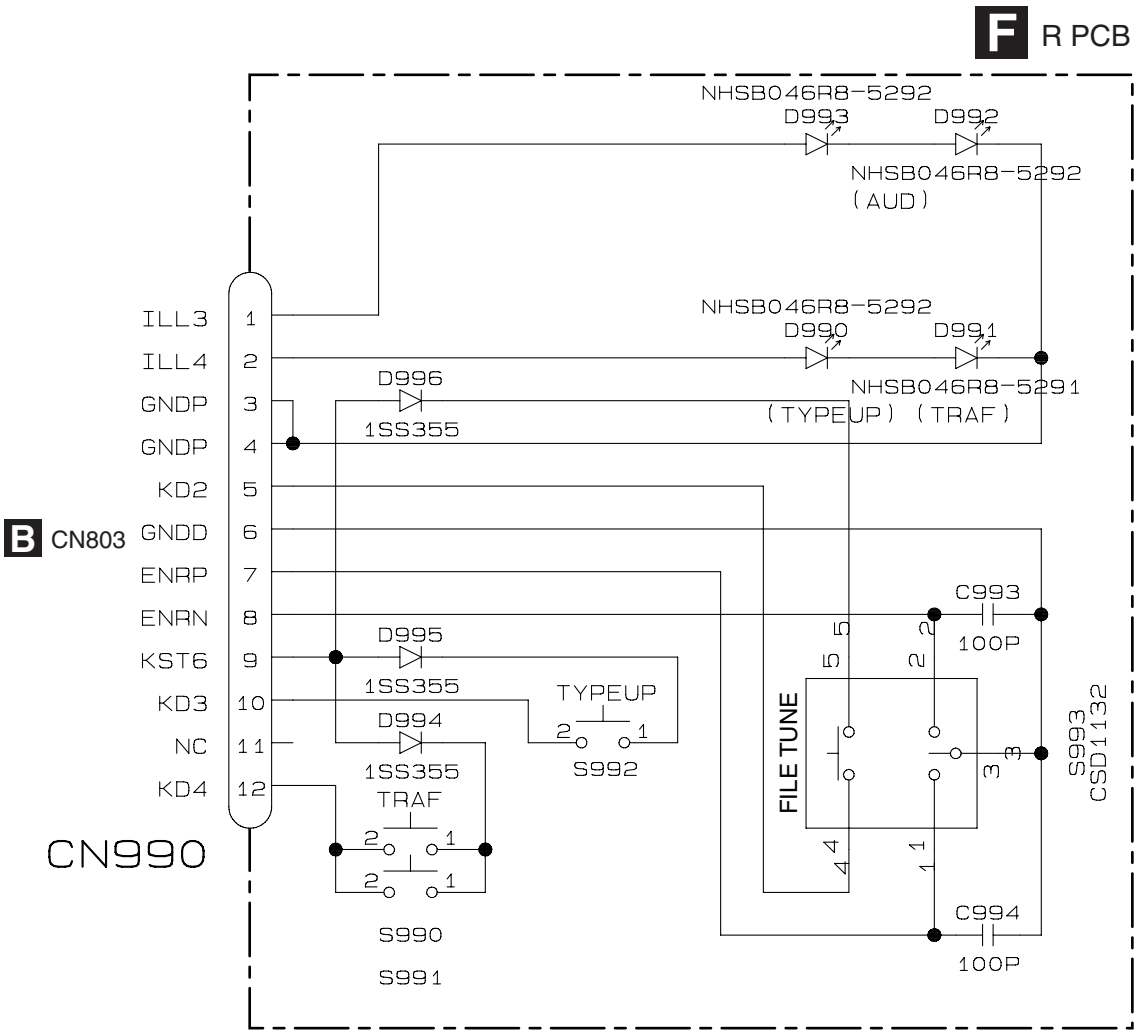
3.7 L PCB



KEYBOARD UNIT
Consists of
KEYBOARD PCB
L PCB
R PCB

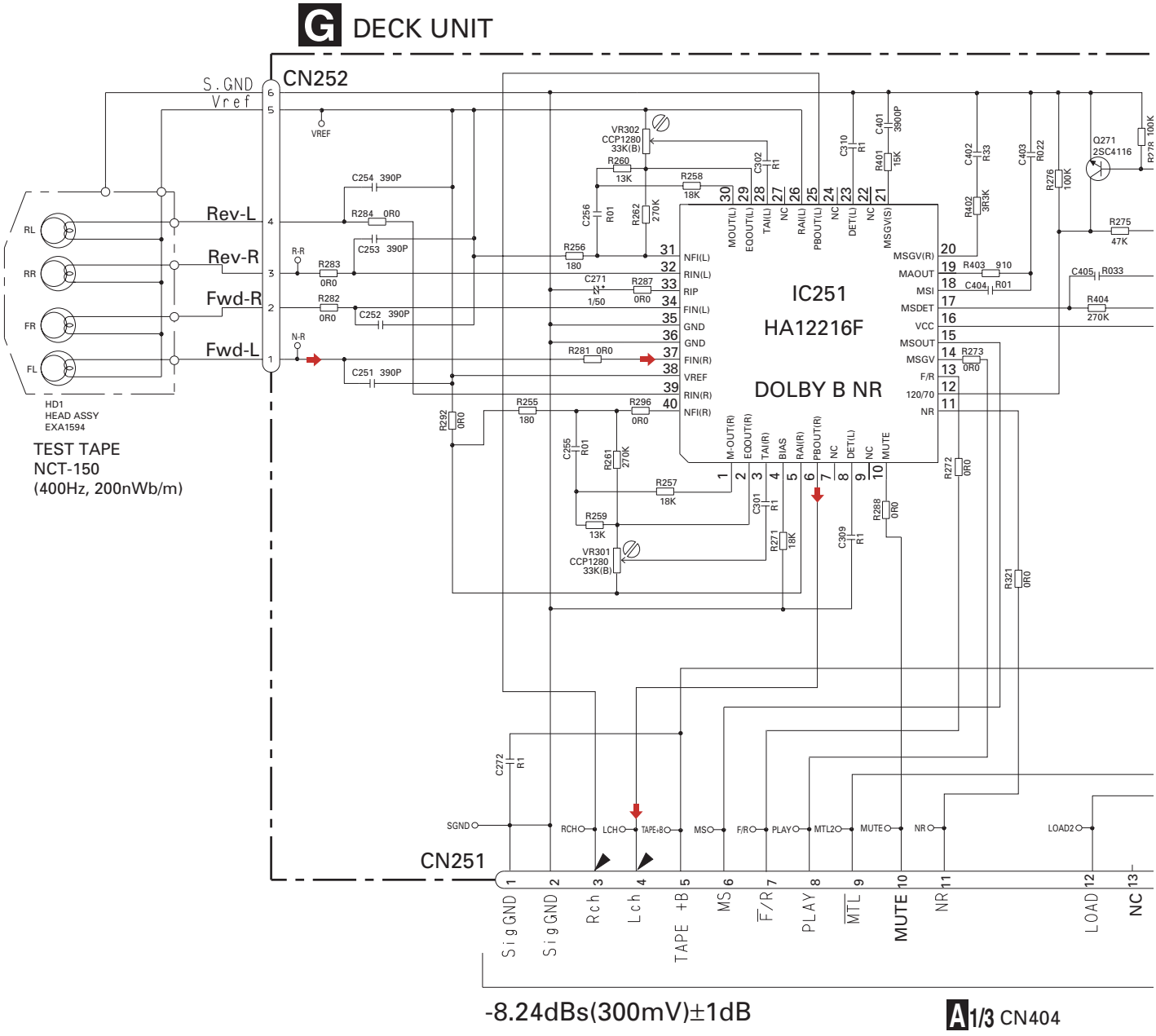
E

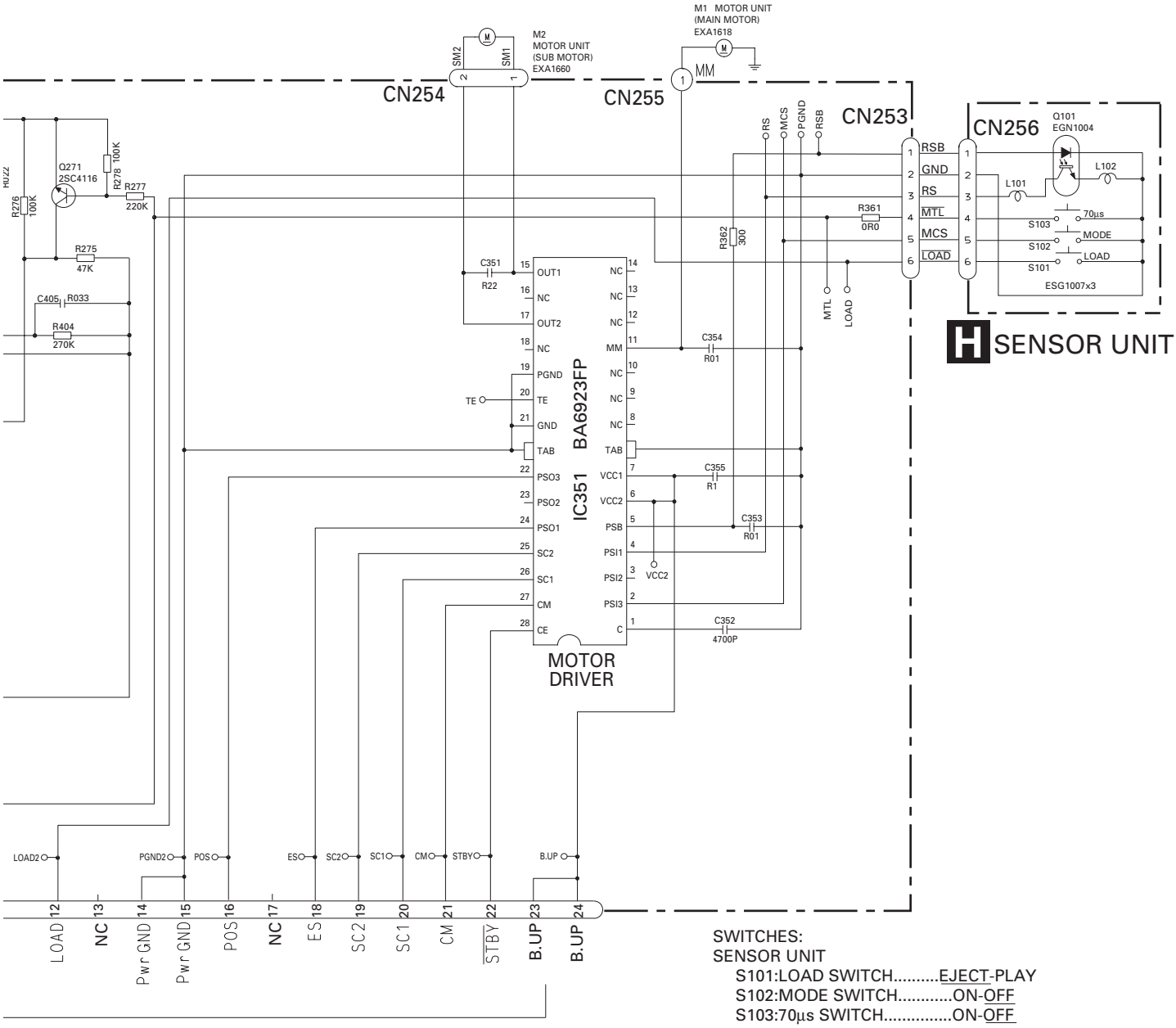
3.8 R PCB



KEYBOARD UNIT
Consists of
KEYBOARD PCB
L PCB
R PCB

3.9 CASSETTE MECHANISM MODULE





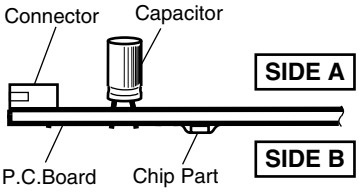
SWITCHES:
SENSOR UNIT
S101:LOAD SWITCH.....EJECT-PLAY
S102:MODE SWITCH.....ON-OFF
S103:70µs SWITCH.....ON-OFF
The underlined indicates the switch position.

04

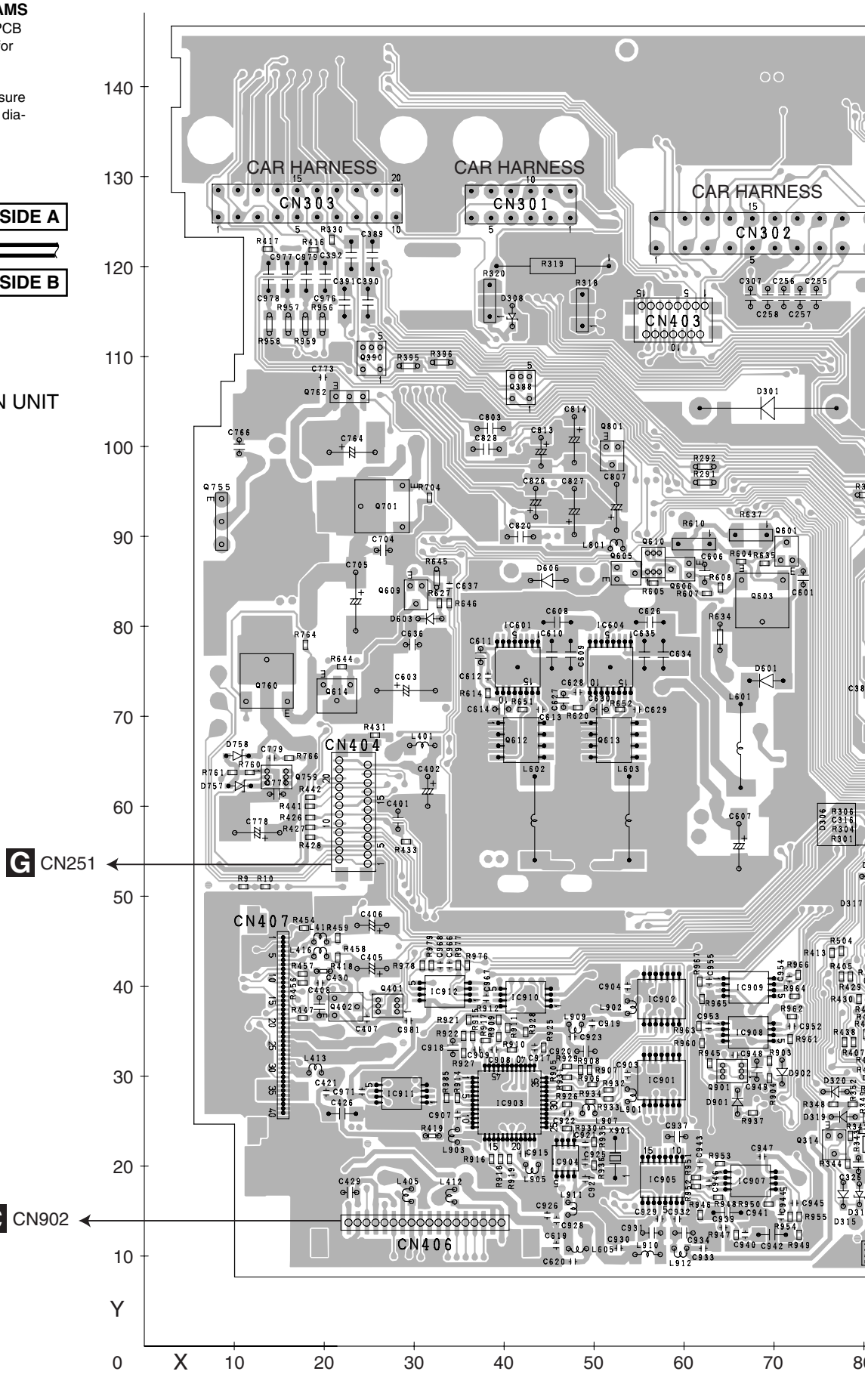
4. PCB CONNECTION DIAGRAM
4.1 MAIN UNIT

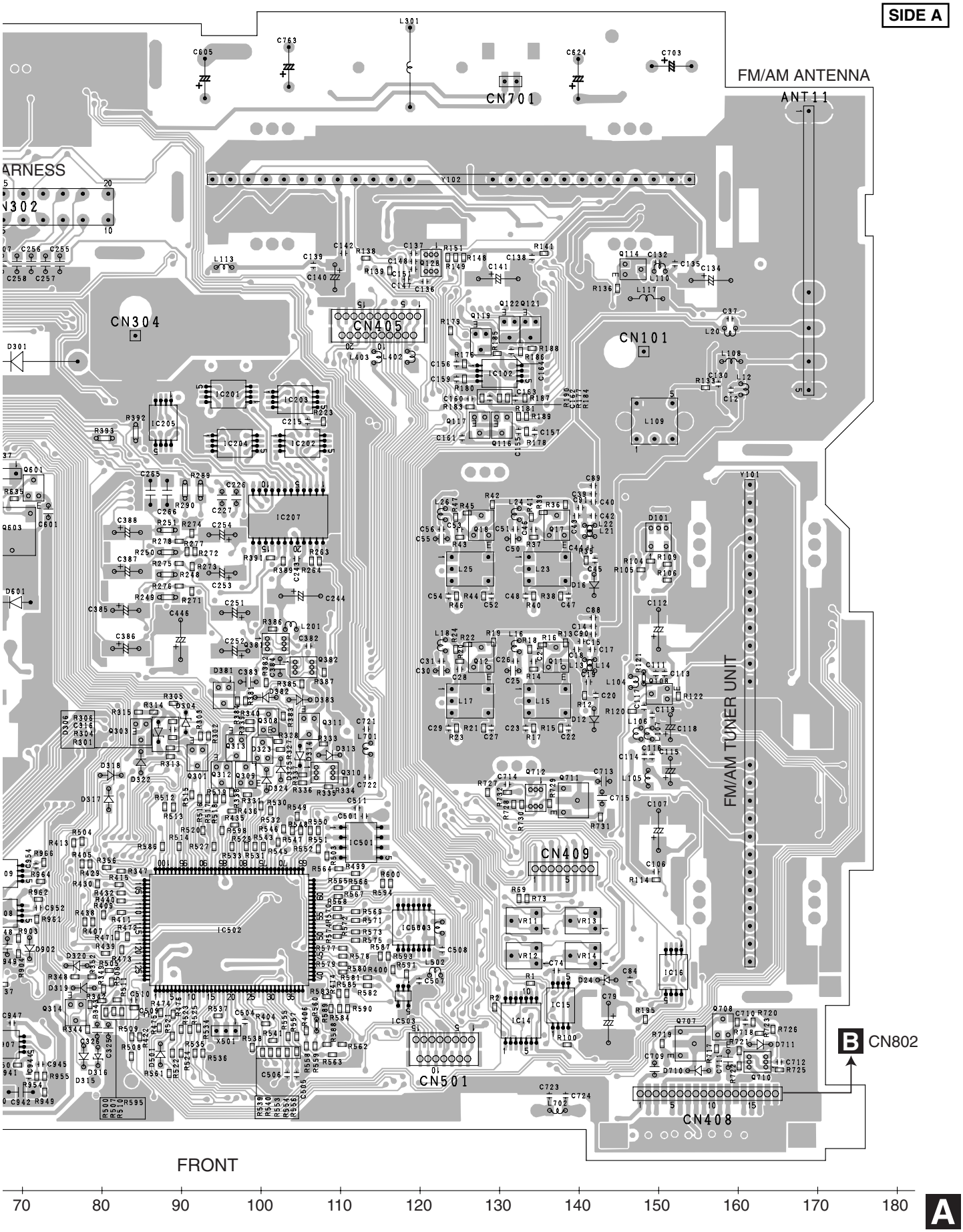
NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams

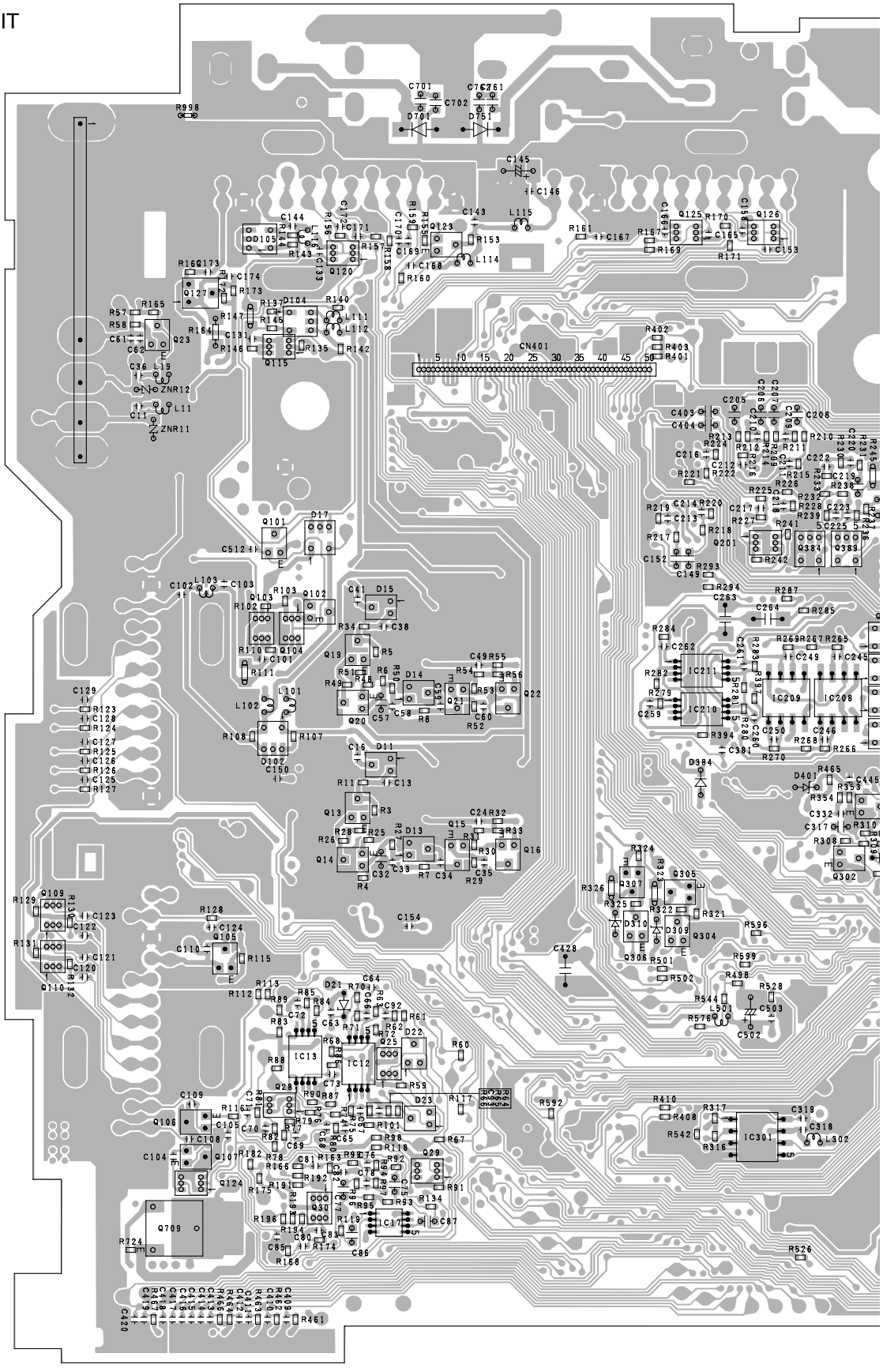


A MAIN UNIT

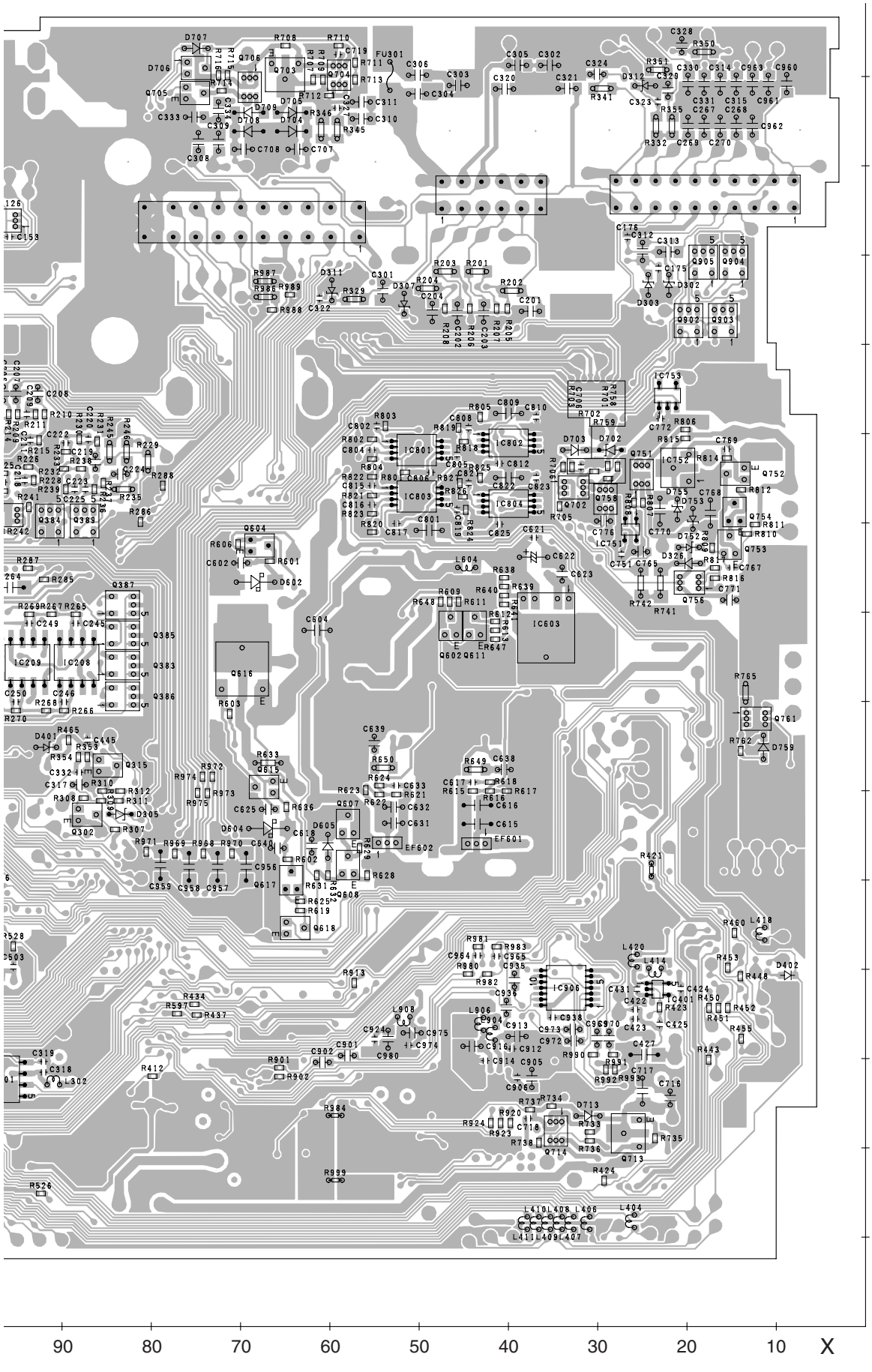



SIDE A
FM/AM ANTENNA
ANT11
CN701
CN304
CN405
CN101
CN409
CN501
CN408
CN802
FM/AM TUNER UNIT
FRONT
Y102
Y101
IC502
IC501
IC207
IC201
IC202
IC203
IC204
IC205
IC102
IC16
IC15
IC14
IC503
IC6003

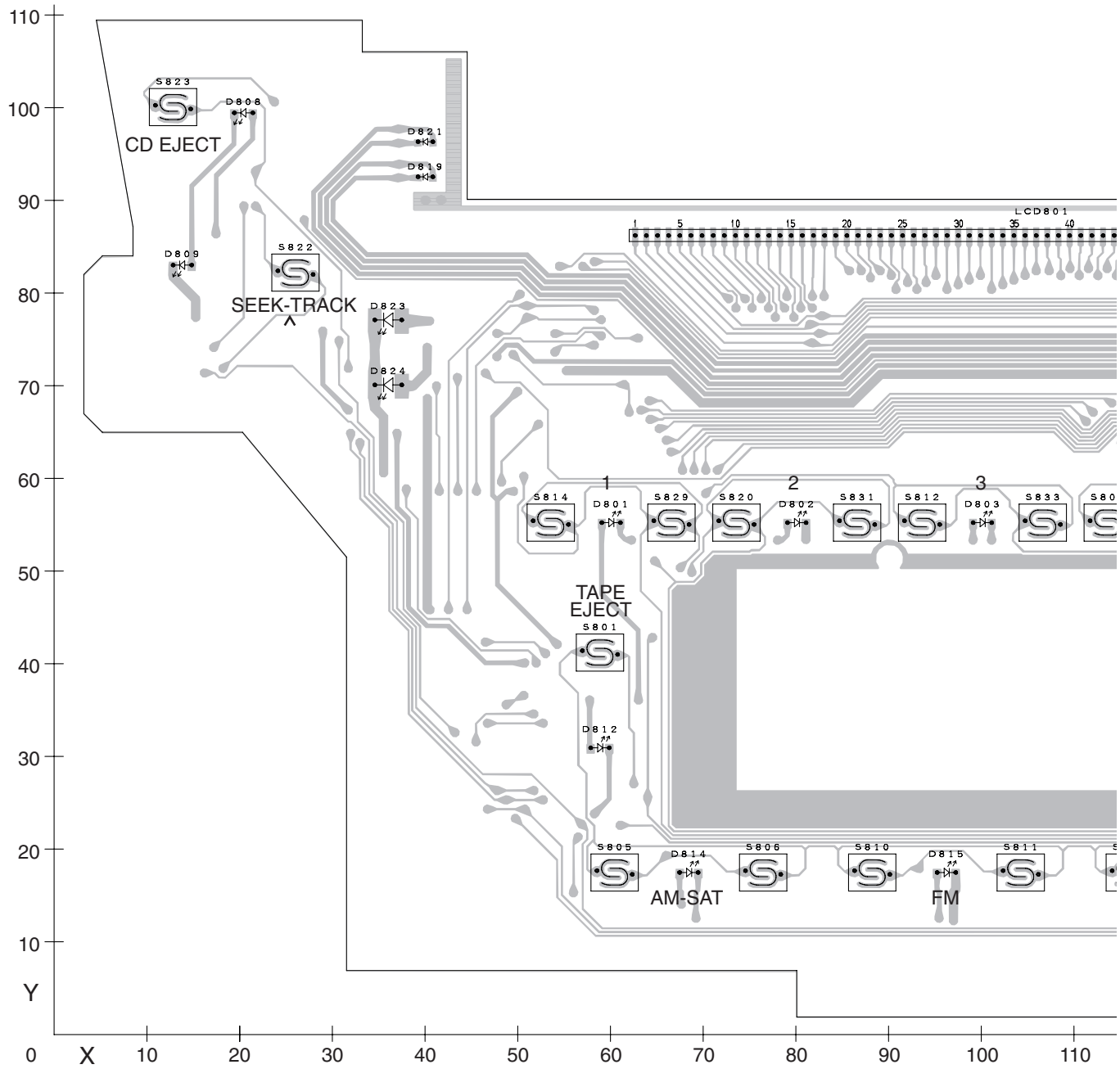
A MAIN UNIT



SIDE B



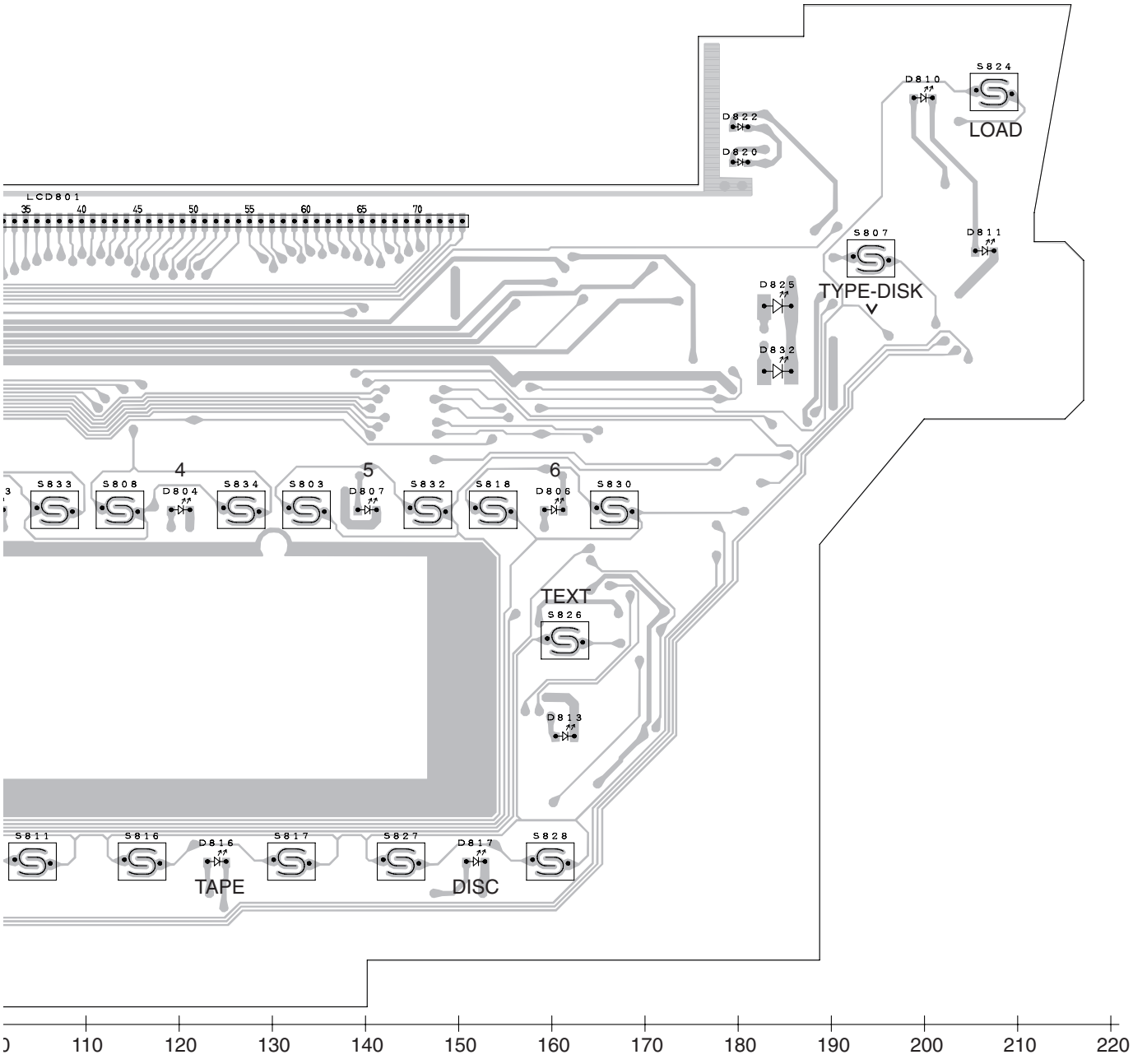
4.2 KEYBOARD PCB

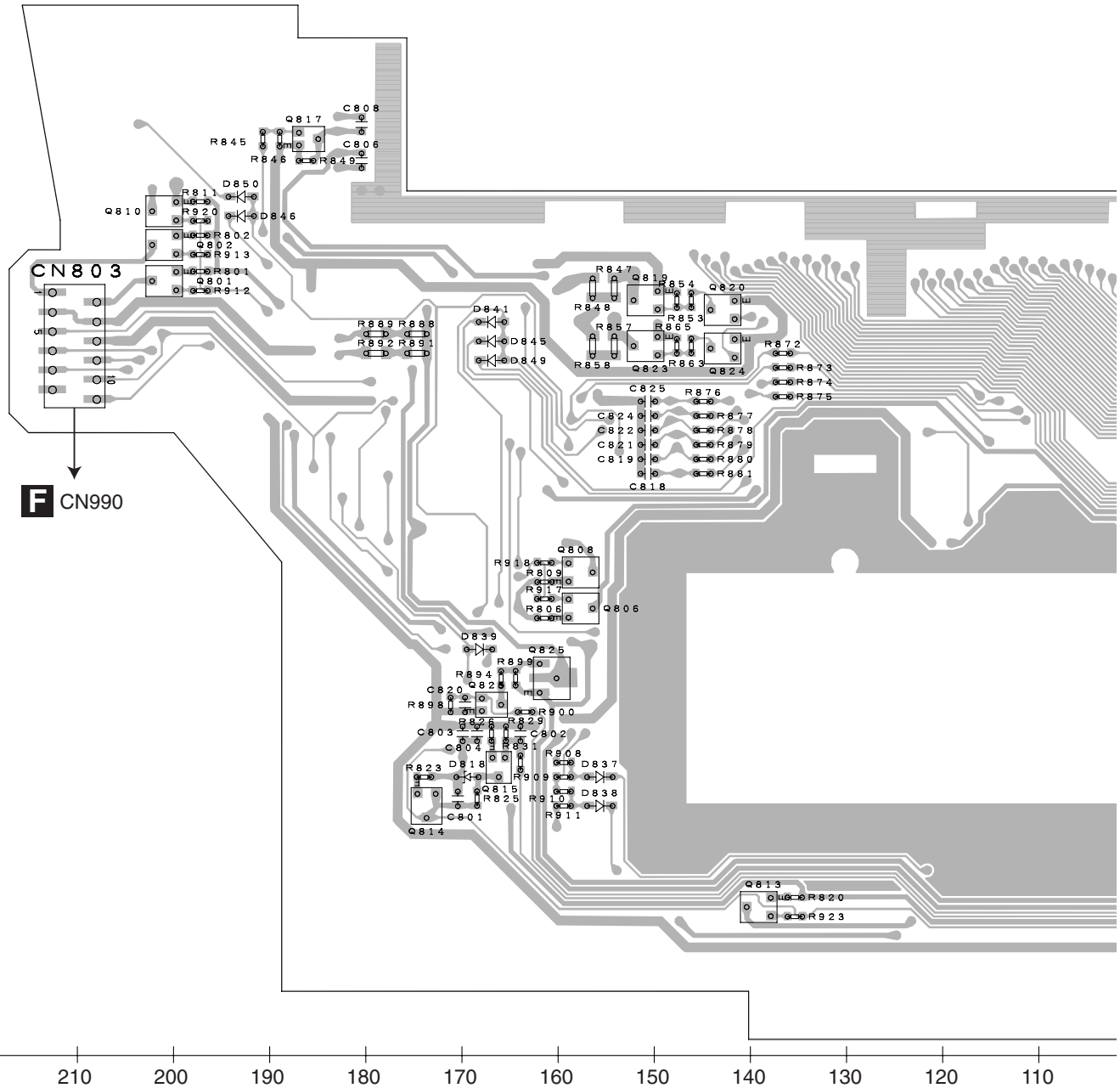


B

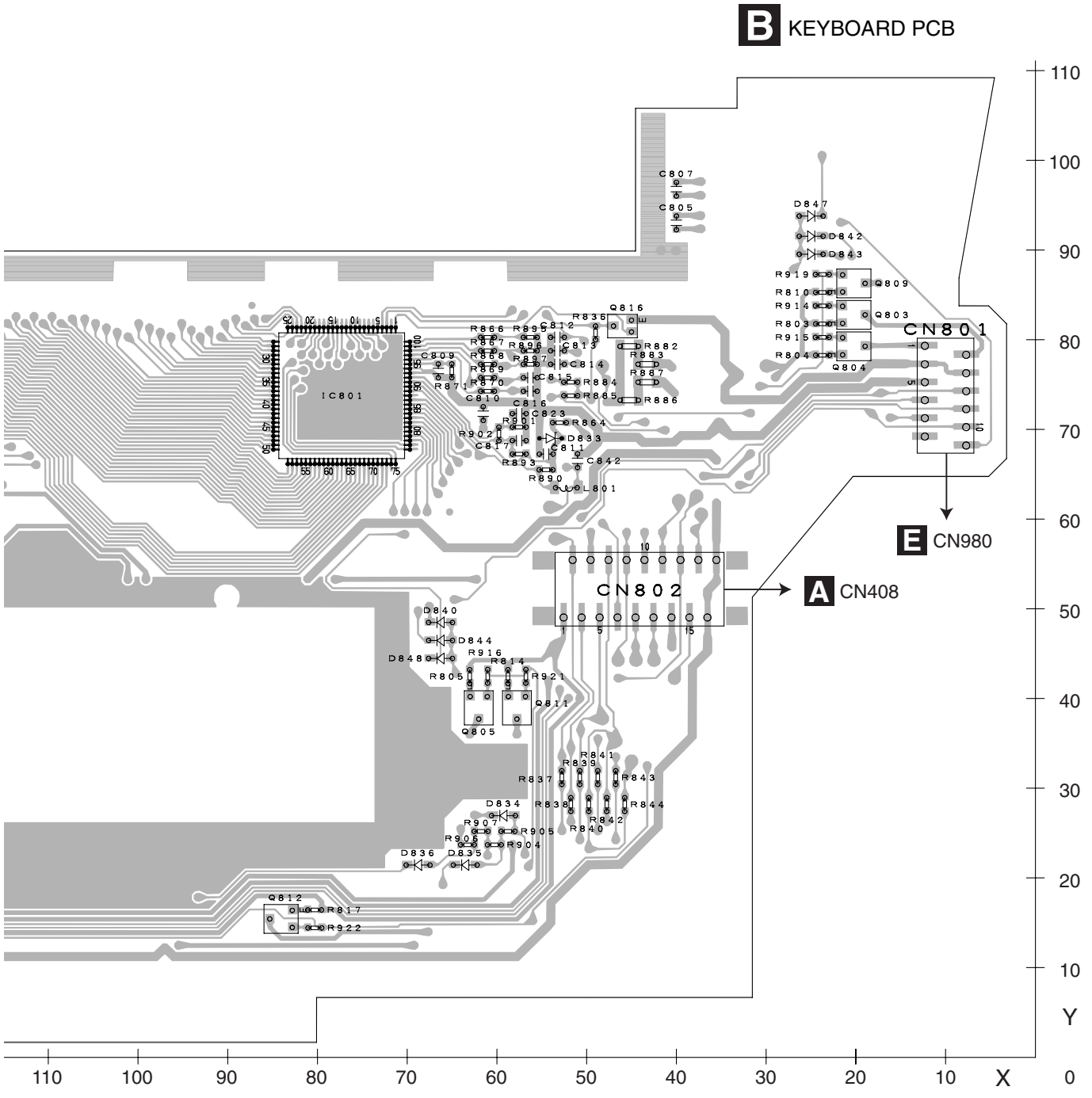
SIDE A

B KEYBOARD PCB




CN803
F CN990
Q817
C808
C806
R845
R846
R849
D850
D846
R811
R920
Q810
R802
Q802
R913
R801
Q801
R912
R889
R888
R892
R891
D841
D845
D849
R847
Q819
R854
Q820
R848
R853
R857
R865
R872
R858
Q823
R863
Q824
R873
R874
R875
C825
R876
C824
R877
C822
R878
C821
R879
C819
R880
R881
C818
Q808
R918
R809
R917
R806
Q806
D839
Q825
R899
R894
Q826
C820
R898
R900
R826
R829
C803
C802
C804
R831
R908
R823
D818
D837
R909
Q815
R825
R910
D838
R911
C801
Q814
Q813
R820
R923
220
210
200
190
180
170
160
150
140
130
120
110

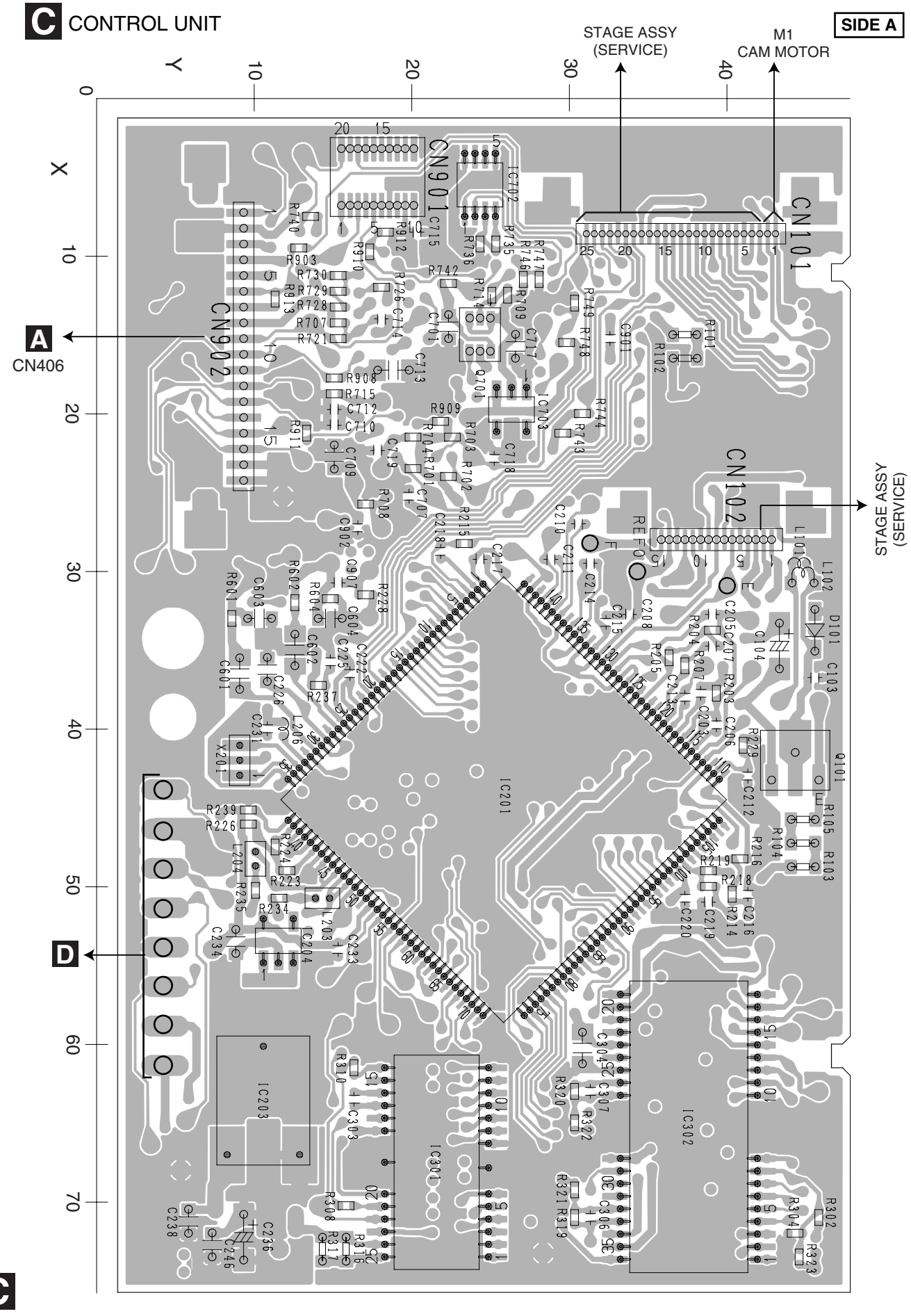
SIDE B


B KEYBOARD PCB
IC801
CN801
CN802
E CN980
A CN408
C807
C805
D847
D842
D843
Q809
Q803
Q804
R919
R810
R914
R803
R915
R804
Q816
R835
C812
R866
R895
R867
C813
R882
R883
R888
R897
C814
R887
R889
C815
R884
R870
R865
R886
C810
C816
C823
R901
R864
R902
D833
C811
C842
R893
R890
L801
D840
D844
D848
R916
R814
R805
R921
Q811
Q805
R841
R839
R837
R843
D834
R838
R844
R907
R842
R905
R840
R906
R904
D836
D835
Q812
R817
R922
110
100
90
80
70
60
50
40
30
20
10
0
Y
X

B

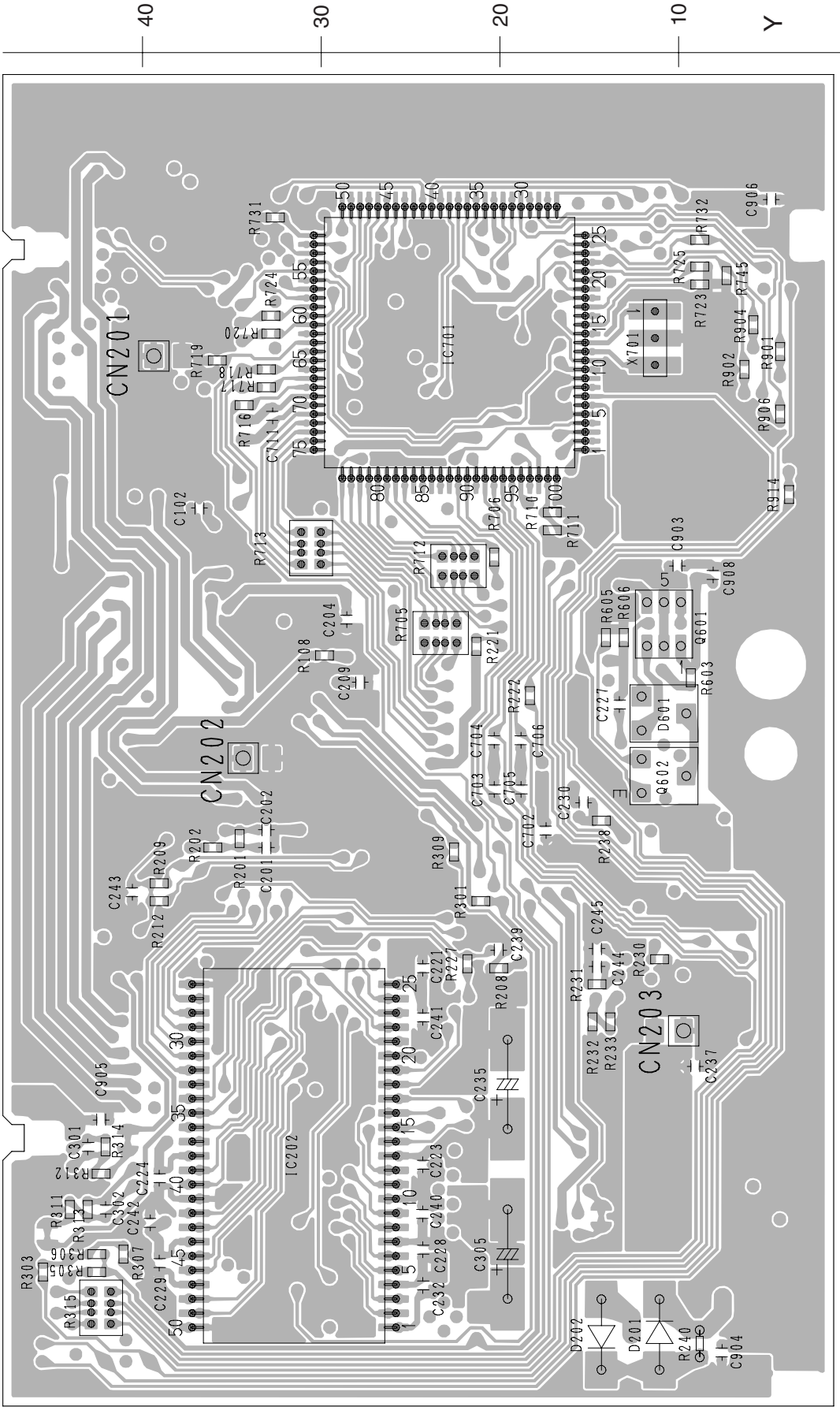
4.3 CONTROL UNIT

C CONTROL UNIT



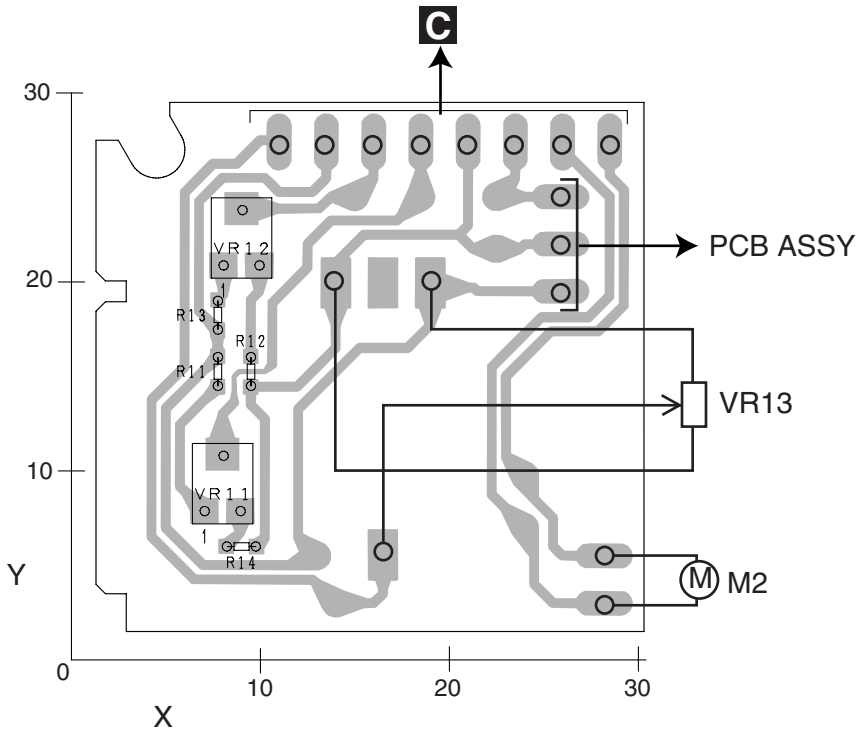
C CONTROL UNIT

SIDE B



4.4 RPS PCB ASSY

D RPS PCB ASSY

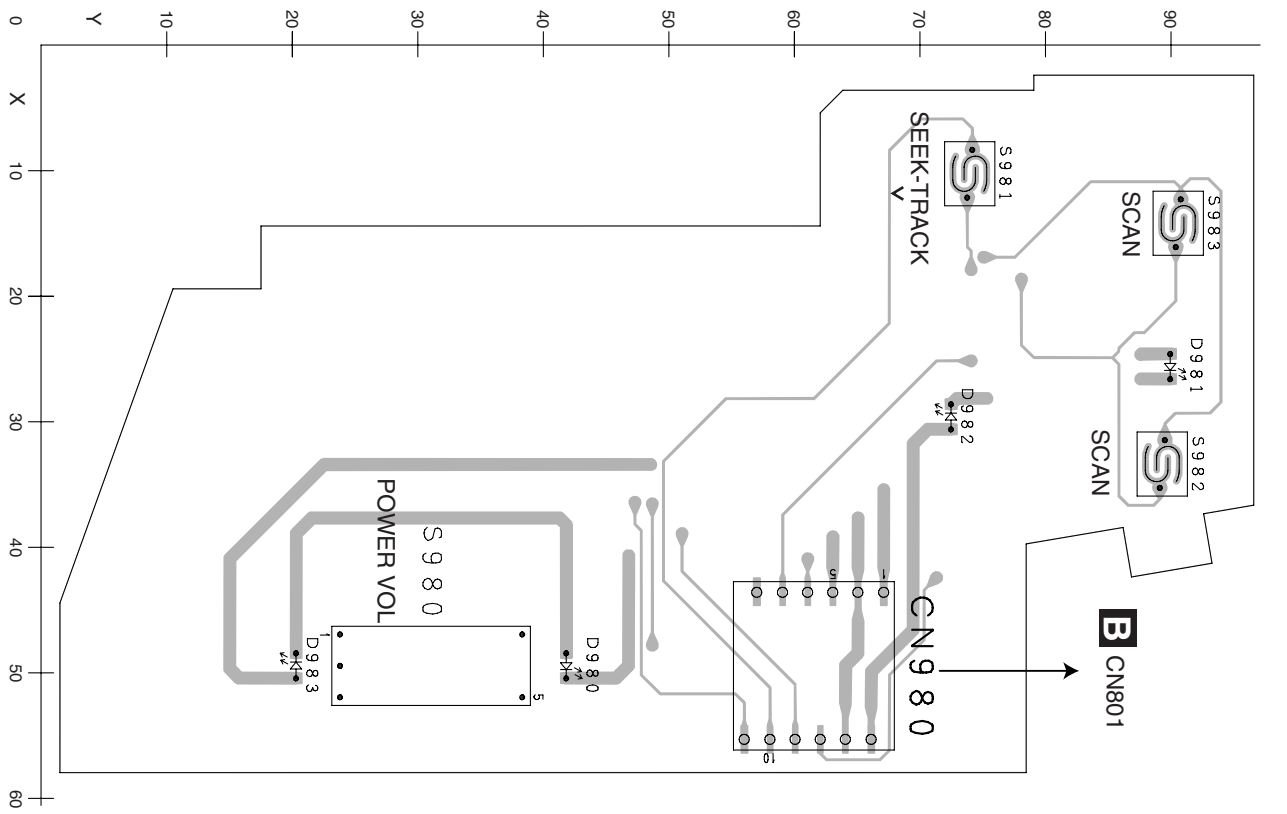


D

4.5 L PCB

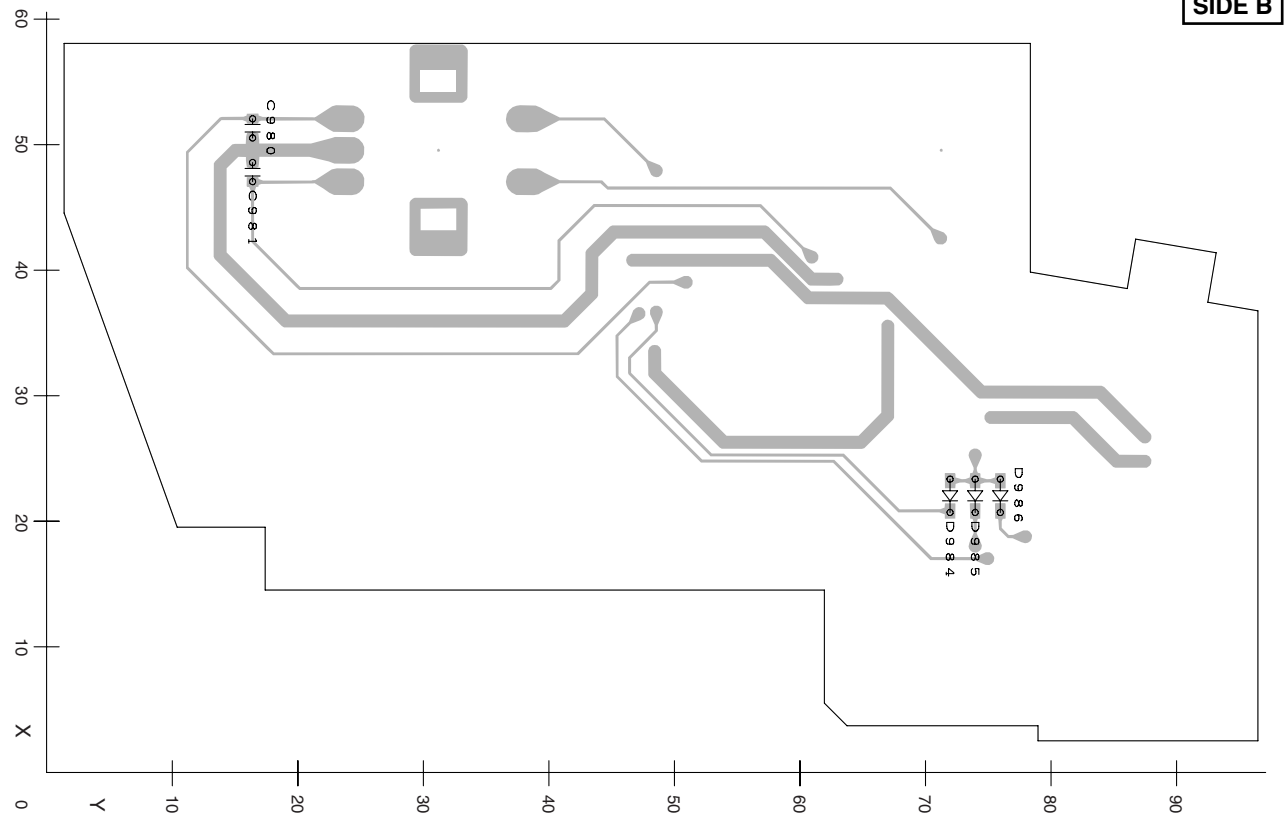
E L PCB

SIDE A



E L PCB

SIDE B

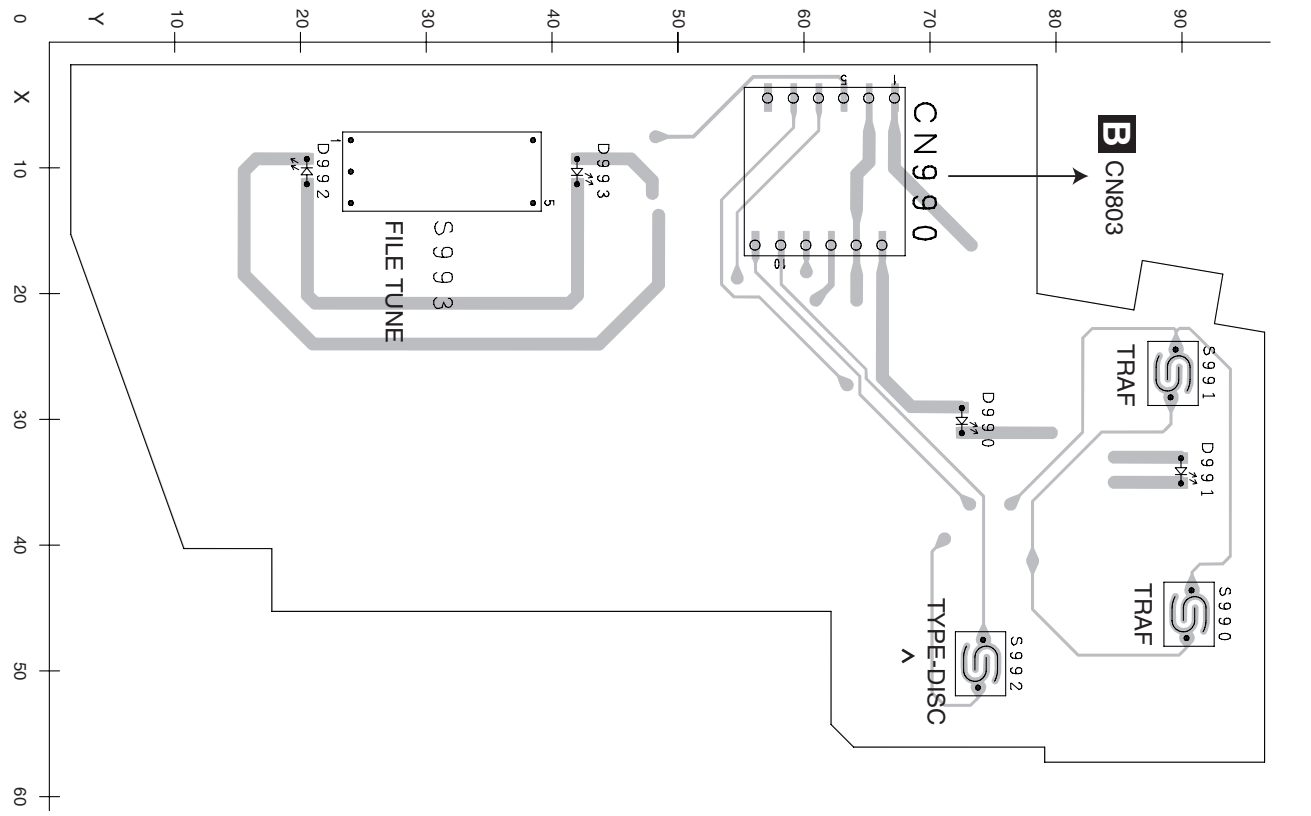


E

4.6 R PCB

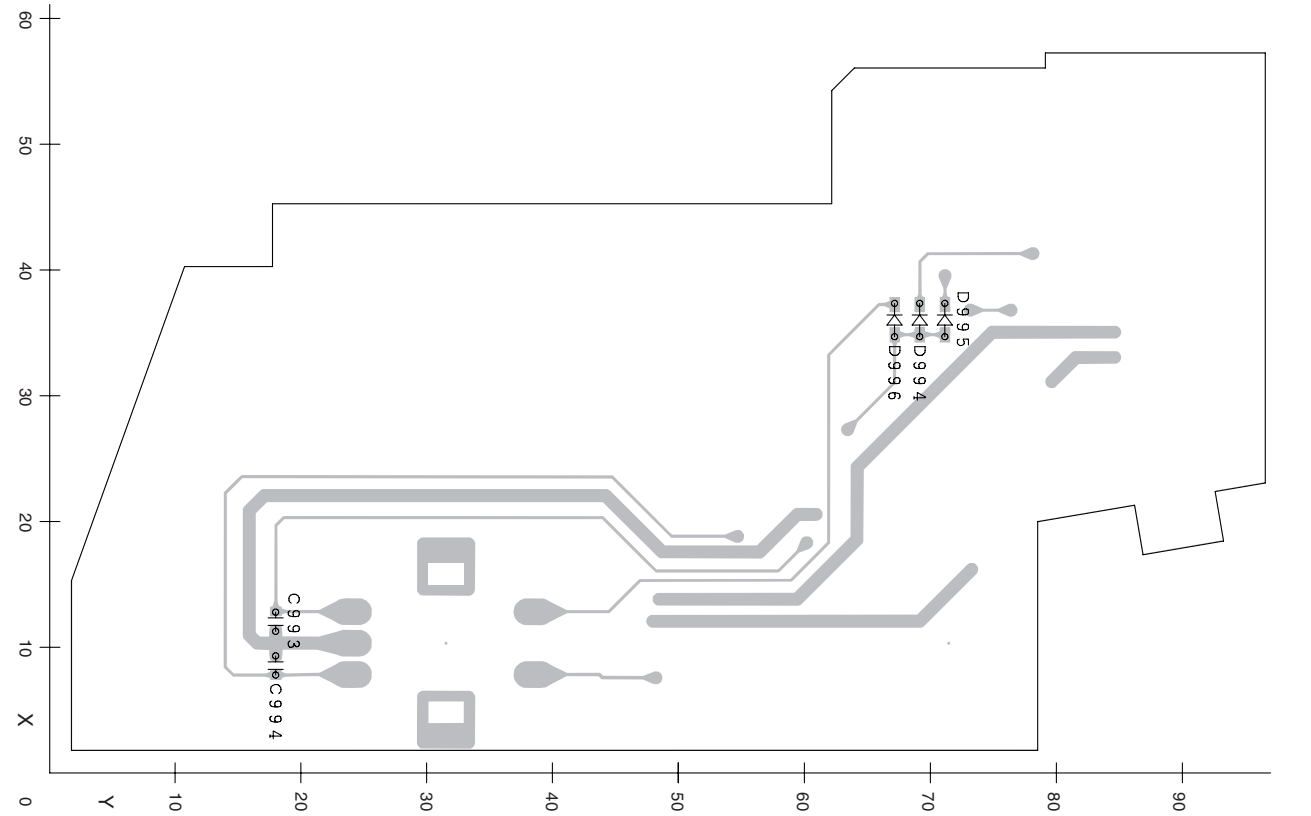
F R PCB

SIDE A



F R PCB

SIDE B

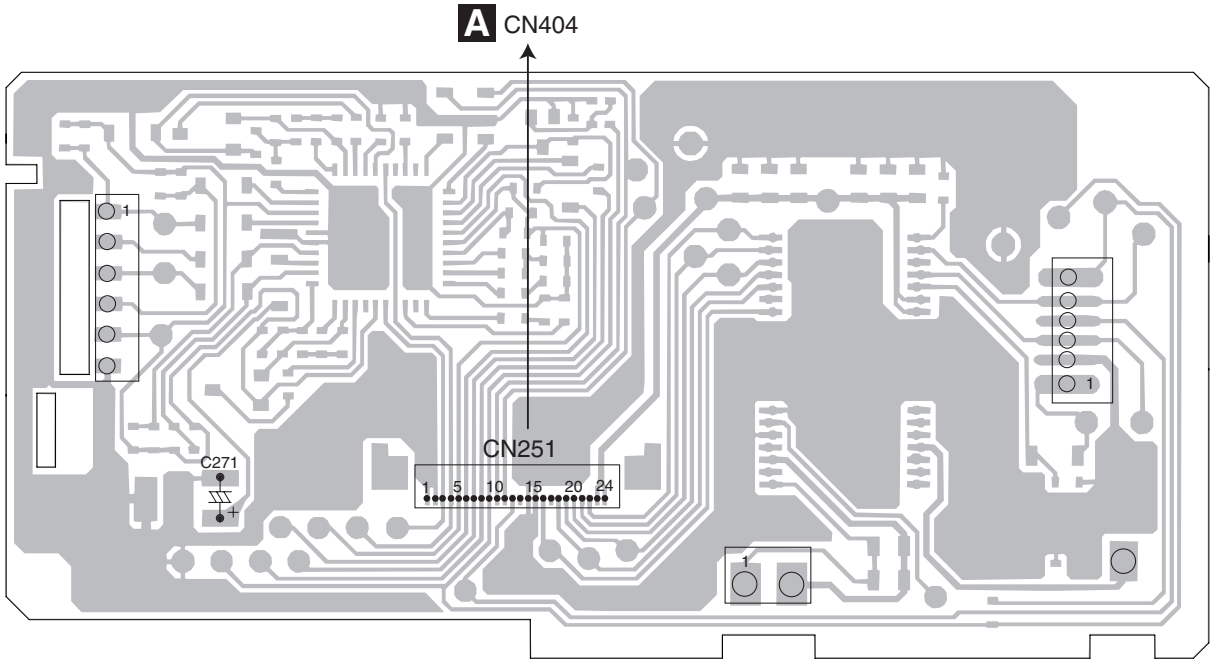


F

4.7 DECK UNIT

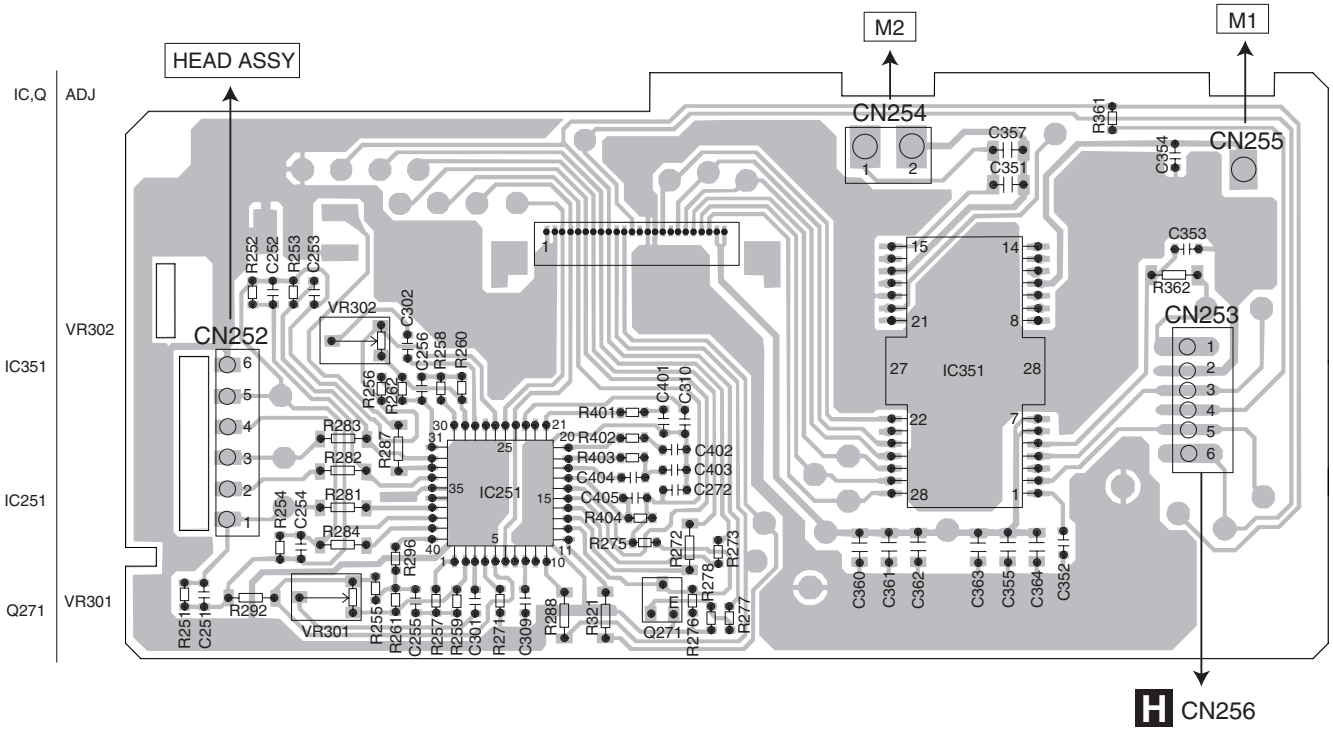
G DECK UNIT

SIDE A



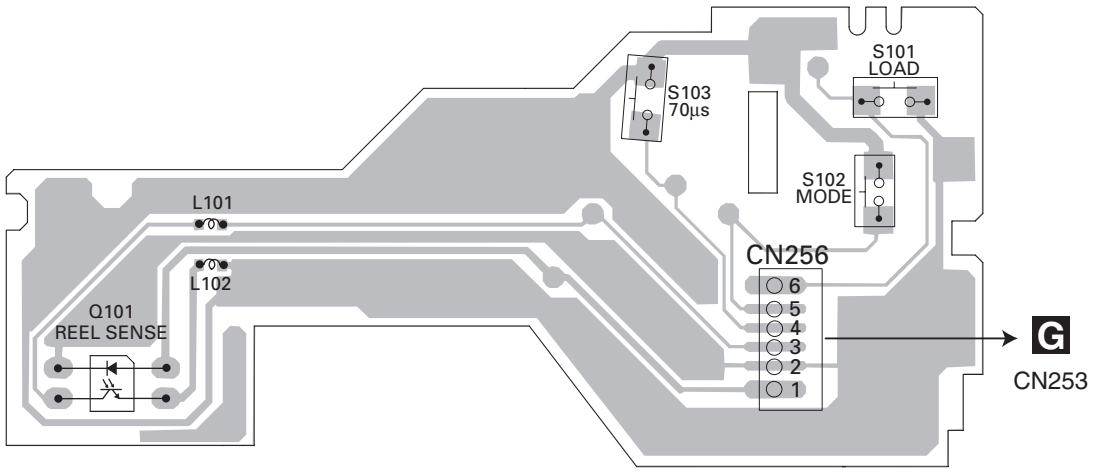
SIDE B

G DECK UNIT



4.8 SENSOR UNIT

H SENSOR UNIT



5. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

  Chip Resistor

  RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

  Chip Capacitor (except for CQS.....)

  CKS....., CCS....., CSZS.....
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Meaning of the figures and others in the parentheses in the parts list.*

  Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.

  IC 301 (A, 91, 111) IC NJM2068V

Unit Number : CWN1115
Unit Name : Main Unit
Unit Number :
Unit Name : Keyboard Unit
Unit Number : CWX3138
Unit Name : Control Unit
Unit Number : CWX2986
Unit Name : RPS PCB Assy
Unit Number : EWM1055
Unit Name : Deck Unit
Unit Number : EWM1057
Unit Name : Sensor Unit

A

Unit Number : CWN1115
Unit Name : Main Unit

MISCELLANEOUS

Circuit Symbol and No.		Part No.
IC 201	(A,96,100) IC	NJM2068V
IC 202	(A,105,94) IC	NJM2068V
IC 203	(A,104,99) IC	NJM4580V
IC 204	(A,97,91) IC	NJM2068V
IC 205	(A,88,97) IC	NJM2068V
IC 207	(A,103,85) IC	BD3842FS
IC 208	(B,88,74) IC	OPA2134UA
IC 209	(B,94,74) IC	OPA2134UA
IC 301	(B,97,28) IC	HA12240FP
IC 502	(A,96,33) IC	PEG186A
IC 601	(A,42,75) IC	TPS54350PWP
IC 603	(B,36,77) IC	BA00BC0WFP
IC 604	(A,52,75) IC	TPS54350PWP
IC 751	(B,26,89) IC	S-80940CNNB-G9A
IC 752	(B,22,96) IC	S-812C56AUA-C3K
Q 23	(B,161,113) Transistor	2SC4081
Q 102	(B,144,84) Transistor	2SC4081
Q 103	(B,150,82) Transistor	UMX1N
Q 104	(B,147,82) Transistor	UMH4N
Q 106	(B,157,29) Transistor	2SA1576
Q 107	(B,157,26) Transistor	2SA1576
Q 108	(A,150,62) Transistor	DTC114EU
Q 109	(B,172,51) Transistor	UMH1N
Q 110	(B,172,47) Transistor	UMH1N
Q 301	(A,92,54) Transistor	2SC4081
Q 302	(B,87,57) Transistor	2SC4081
Q 303	(A,85,58) Transistor	2SC4081
Q 308	(A,101,59) Transistor	2SC4081
Q 310	(A,108,53) Transistor	UMT2N
Q 311	(A,106,58) Transistor	DTC144EU
Q 312	(A,95,52) Transistor	DTA114EU
Q 313	(A,97,56) Transistor	2SC4081
Q 314	(A,77,22) Transistor	DTA114EU
Q 315	(B,85,63) Transistor	2SC4081
Q 382	(A,105,66) Transistor	UMZ1N
Q 383	(B,83,74) Transistor	FMG12
Q 385	(B,83,78) Transistor	FMG12
Q 386	(B,83,71) Transistor	FMG12
Q 387	(B,83,81) Transistor	FMG12
Q 601	(A,71,88) Transistor	2SC4081
Q 602	(B,47,79) Transistor	DTC114EU
Q 603	(A,69,81) Transistor	2SA1952
Q 604	(B,68,88) Transistor	2SA1576
Q 605	(A,54,86) Transistor	DTC114EU
Q 606	(A,60,86) Transistor	2SA1576
Q 609	(A,30,84) Transistor	2SC4081
Q 610	(A,57,87) Transistor	UMD12N
Q 611	(B,44,79) Transistor	DTC114EU
Q 612	(A,42,67) POWER MOS FET	RSS090N03
Q 613	(A,52,67) POWER MOS FET	RSS090N03
Q 614	(A,21,72) Transistor	2SB1427
Q 615	(B,67,61) Transistor	2SC4081
Q 616	(B,70,76) Transistor	2SA1952
Q 617	(B,64,50) Transistor	2SA1576
Q 618	(B,64,45) Transistor	DTC114EU
Q 701	(A,24,93) Transistor	2SB1184F5
Q 702	(B,33,94) Transistor	UMX1N

Circuit Symbol and No.		Part No.
Q 703	(B,65,140) Transistor	2SB1260
Q 704	(B,59,140) Transistor	UMX1N
Q 705	(B,75,138) Transistor	DTC114EU
Q 706	(B,69,139) Transistor	UMT2N
Q 707	(A,155,18) Transistor	2SB1260
Q 708	(A,158,21) Transistor	2SC4081
Q 709	(B,157,18) Transistor	2SB1184F5
Q 710	(A,162,16) Transistor	UMX1N
Q 751	(B,25,96) Transistor	UMD12N
Q 752	(B,15,96) Transistor	2SC4081
Q 753	(B,15,88) Transistor	2SC4154-11
Q 754	(B,15,91) Transistor	2SA1602A
Q 755	(A,9,92) Transistor	2SB1185
Q 756	(B,20,83) Transistor	UMF5N
D 101	(A,150,82) Diode	CPH5512
D 102	(B,149,70) Diode	CPH5512
D 301	(A,69,104) Diode	RM4LFJ10
D 304	(A,91,59) Diode	HZU8R2(B1)
D 305	(B,84,57) Diode	HZU8R2(B1)
D 306	(A,87,58) Diode	HZU8R2(B1)
D 307	(B,52,115) Diode	UDZS18(B)
D 308	(A,41,115) Diode	UDZS18(B)
D 311	(B,60,116) Diode	UDZS18(B)
D 313	(A,109,55) Diode	1SS355
D 314	(A,105,55) Diode	HZU9R1(B1)
D 315	(A,78,17) Diode	1SS355
D 316	(A,80,17) Diode	UDZS8R2(B)
D 317	(A,81,49) Diode	1SS355
D 318	(A,81,52) Diode	1SS355
D 319	(A,78,25) Diode	1SS355
D 320	(A,77,28) Diode	1SS355
D 322	(A,85,54) Diode	1SS355
D 323	(A,100,55) Diode	DAP202U
D 324	(A,101,52) Diode	1SS355
D 326	(B,20,86) Diode	1SS355
D 381	(A,95,62) Diode	DAP202U
D 383	(A,105,62) Diode	1SS355
D 384	(B,103,65) Diode	1SS355
D 401	(B,92,65) Diode	UDZS4R7(B)
D 601	(A,69,74) Diode	RSX201L-30
D 602	(B,68,83) Diode	PTZ16(A)
D 603	(A,32,81) Diode	1SS355
D 604	(B,67,56) Diode	PTZ16(A)
D 606	(A,45,85) Diode	1SR154-400
D 701	(B,133,135) Diode	RB051L-40
D 702	(B,29,98) Diode	HZU8R2(B1)
D 703	(B,33,98) Diode	1SS355
D 704	(B,64,134) Diode	RR264M-400
D 705	(B,64,136) Diode	RR264M-400
D 706	(B,75,141) Diode	DAN202U
D 707	(B,75,143) Diode	1SS355
D 708	(B,69,134) Diode	RR264M-400
D 709	(B,69,136) Diode	RR264M-400
D 710	(A,155,15) Diode	1SS355
D 711	(A,163,18) Diode	1SS355
D 751	(B,126,135) Diode	1SR154-400
D 752	(B,20,87) Diode	UDZS16(B)
D 753	(B,19,91) Diode	UDZS9R1(B)
D 755	(B,21,92) Diode	UDZS16(B)
ZNR11	(B,161,103) Surge Protector	IMSA-6801-01Y901
ZNR12	(B,162,107) Surge Protector	IMSA-6801-01Y901
L 11	(B,160,106) Inductor	LCYB68NJ1608
L 12	(A,160,101) Inductor	LCYB12NJ1608
L 19	(B,160,109) Inductor	LCYB68NJ1608
L 20	(A,159,108) Inductor	LCYB12NJ1608
L 101	(B,147,74) Inductor	LCTC6R8K1608
L 102	(B,149,74) Inductor	LCTC6R8K1608
L 103	(B,156,86) Inductor	LCTC6R8K1608
L 104	(A,147,64) Inductor	CTF1473
L 105	(A,149,52) Inductor	CTF1295
L 106	(A,148,57) Inductor	CTF1473
L 107	(A,149,57) Inductor	CTF1473
L 108	(A,159,104) Chip Coil	LCTAW330J2520
L 109	(A,150,97) Coil	CTB1112
L 201	(A,104,71) Inductor	CTF1473
L 301	(A,119,141) Choke Coil 95µH	CTH1301
L 302	(B,91,27) Inductor	CTF1473
L 401	(A,31,67) Inductor	CTF1616
L 404	(B,26,12) Inductor	CTF1473
L 405	(A,30,17) Inductor	CTF1473
L 406	(B,31,12) Inductor	CTF1473
L 407	(B,33,12) Inductor	CTF1306
L 408	(B,34,12) Inductor	CTF1306
L 409	(B,35,12) Inductor	CTF1306
L 410	(B,37,12) Inductor	CTF1306
L 411	(B,38,12) Inductor	CTF1306
L 412	(A,35,17) Inductor	CTF1558
L 416	(A,20,43) Inductor	CTF1473
L 417	(A,20,45) Inductor	CTF1473
L 501	(B,101,41) Inductor	CTF1473
L 601	(A,66,67) Inductor	CTH1257
L 602	(A,43,59) Inductor	CTH1257
L 603	(A,54,59) Inductor	CTH1257
L 605	(A,48,11) Inductor	CTF1295
L 701	(A,114,56) Inductor	CTF1473
L 702	(A,137,10) Inductor	CTF1295
X 501	(A,96,20) Radiator 10.0MHz	CSS1577
⚠FU301	(B,53,140) Fuse 8A	CEK1263
Y 101	(A,162,89) FM/AM Tuner Unit	CWE1836
EF601	(B,44,54) EMI Filter	CCG1163
EF602	(B,54,54) EMI Filter	CCG1163

RESISTORS

R 1	(A,134,26)	RS1/16SS0R0J
R 2	(A,129,23)	RS1/16SS0R0J
R 9	(A,11,51)	RS1/16SS332J
R 10	(A,13,51)	RS1/16SS471J
R 57	(B,163,115)	RS1/16SS223J
R 58	(B,163,114)	RS1/16SS472J
R 67	(B,131,28)	RS1/16SS0R0J
R 102	(B,149,84)	RS1/16SS222J
R 103	(B,147,85)	RS1/16SS222J
R 104	(A,149,79)	RS1/16SS104J
R 105	(A,148,78)	RS1/16SS225J
R 106	(A,151,77)	RS1/16SS225J
R 107	(B,146,70)	RS1/16SS225J
R 108	(B,151,70)	RS1/16SS225J
R 109	(A,151,79)	RS1/16SS104J
R 110	(B,149,80)	RS1/16SS102J

Circuit Symbol and No.		Part No.
R 111	(B,152,77)	RS1/10S821J
R 114	(A,150,39)	RS1/16SS471J
R 116	(B,153,30)	RS1/16SS272J
R 118	(B,138,27)	RS1/16SS272J
R 120	(A,147,60)	RS1/16SS103J
R 122	(A,153,62)	RS1/16SS681J
R 123	(B,169,73)	RS1/16SS681J
R 124	(B,169,71)	RS1/16SS681J
R 125	(B,169,69)	RS1/16SS681J
R 126	(B,169,67)	RS1/16SS681J
R 127	(B,169,65)	RS1/16SS681J
R 128	(B,155,51)	RS1/16SS222J
R 129	(B,174,52)	RS1/16SS223J
R 130	(B,170,51)	RS1/16SS223J
R 131	(B,174,47)	RS1/16SS223J
R 132	(B,170,46)	RS1/16SS223J
R 133	(A,156,101)	RS1/16SS222J
R 165	(B,161,115)	RS1/16SS473J
R 201	(B,44,118)	RS1/10S103J
R 202	(B,40,116)	RS1/10S103J
R 203	(B,47,118)	RS1/10S103J
R 204	(B,49,116)	RS1/10S103J
R 205	(B,40,114)	RS1/16SS562J
R 206	(B,44,114)	RS1/16SS562J
R 207	(B,41,114)	RS1/16SS562J
R 208	(B,47,114)	RS1/16SS562J
R 209	(B,95,102)	RS1/16SS473J
R 210	(B,92,102)	RS1/16SS473J
R 211	(B,93,102)	RS1/16SS473J
R 212	(B,98,102)	RS1/16SS473J
R 213	(B,99,102)	RS1/16SS473J
R 214	(B,96,102)	RS1/16SS473J
R 215	(B,93,99)	RS1/16SS473J
R 216	(B,99,100)	RS1/16SS473J
R 217	(B,106,92)	RS1/16SS153J
R 218	(B,103,92)	RS1/16SS153J
R 219	(B,108,94)	RS1/16SS223J
R 220	(B,102,94)	RS1/16SS223J
R 221	(B,104,97)	RS1/16SS223J
R 222	(B,102,98)	RS1/16SS223J
R 223	(A,108,97)	RS1/16SS223J
R 224	(B,101,100)	RS1/16SS223J
R 225	(B,97,96)	RS1/16SS223J
R 226	(B,94,96)	RS1/16SS223J
R 227	(B,97,94)	RS1/16SS223J
R 228	(B,93,95)	RS1/16SS223J
R 229	(B,80,97)	RS1/10S102J
R 230	(B,88,99)	RS1/16SS223J
R 231	(B,86,99)	RS1/16SS333J
R 232	(B,90,96)	RS1/16SS333J
R 233	(B,90,98)	RS1/16SS223J
R 235	(B,83,94)	RS1/10S102J
R 236	(B,86,94)	RS1/16SS223J
R 237	(B,85,95)	RS1/16SS333J
R 238	(B,88,96)	RS1/16SS333J
R 239	(B,90,94)	RS1/16SS223J
R 248	(A,88,77)	RS1/10S101J
R 249	(A,88,75)	RS1/10S101J
R 250	(A,88,80)	RS1/10S101J
R 251	(A,88,83)	RS1/10S101J

Circuit Symbol and No.		Part No.
R 263	(A,107,79)	RS1/16SS471J
R 264	(A,106,79)	RS1/16SS471J
R 265	(B,89,80)	RS1/16SS153J
R 266	(B,90,69)	RS1/16SS153J
R 267	(B,91,80)	RS1/16SS153J
R 268	(B,92,69)	RS1/16SS153J
R 269	(B,94,80)	RS1/16SS153J
R 270	(B,95,69)	RS1/16SS153J
R 271	(A,91,75)	RS1/16SS223J
R 272	(A,92,80)	RS1/16SS223J
R 273	(A,91,78)	RS1/16SS223J
R 274	(A,91,83)	RS1/16SS223J
R 275	(A,90,79)	RS1/16SS101J
R 276	(A,90,76)	RS1/16SS101J
R 277	(A,91,80)	RS1/16SS101J
R 278	(A,90,82)	RS1/16SS101J
R 293	(B,102,88)	RS1/16SS473J
R 294	(B,102,86)	RS1/16SS473J
R 301	(A,89,56)	RS1/16SS223J
R 302	(A,93,57)	RS1/16SS223J
R 303	(A,92,57)	RS1/16SS473J
R 304	(A,89,57)	RS1/16SS103J
R 305	(A,89,61)	RS1/16SS222J
R 306	(A,89,59)	RS1/16SS222J
R 307	(B,84,56)	RS1/16SS223J
R 308	(B,88,59)	RS1/16SS223J
R 309	(B,86,59)	RS1/16SS473J
R 310	(B,86,60)	RS1/16SS103J
R 311	(B,84,59)	RS1/16SS222J
R 312	(B,84,60)	RS1/16SS222J
R 313	(A,89,55)	RS1/16SS223J
R 314	(A,87,60)	RS1/16SS472J
R 315	(A,85,60)	RS1/16SS472J
R 316	(B,102,28)	RS1/16SS472J
R 317	(B,102,30)	RS1/16SS472J
R 318	(A,49,115)	RS1/4S101J
R 319	(A,45,120)	RS1PMF680J
R 320	(A,38,116)	RS1/4S101J
R 327	(A,102,55)	RS1/16SS472J
R 328	(A,102,56)	RS1/16SS103J
R 329	(B,57,115)	RS1/10S221J
R 330	(A,21,123)	RS1/16SS0R0J
R 333	(A,108,56)	RS1/16SS473J
R 334	(A,111,51)	RS1/16SS473J
R 335	(A,109,51)	RS1/16SS103J
R 336	(A,105,51)	RS1/16SS103J
R 337	(A,105,52)	RS1/16SS103J
R 338	(A,96,50)	RS1/16SS473J
R 339	(A,99,58)	RS1/16SS471J
R 340	(A,99,59)	RS1/16SS392J
R 341	(B,30,139)	RS1/10S101J
R 342	(A,80,24)	RS1/16SS223J
R 343	(A,79,23)	RS1/16SS223J
R 344	(A,78,20)	RS1/16SS222J
R 345	(B,59,134)	RS1/10S472J
R 346	(B,61,134)	RS1/10S472J
R 347	(A,82,40)	RS1/16SS473J
R 348	(A,77,27)	RS1/16SS103J
R 349	(A,80,25)	RS1/16SS152J

Circuit Symbol and No.		Part No.
R 350	(B,18,143)	RS1/10S102J
R 352	(A,79,27)	RS1/16SS152J
R 353	(B,87,64)	RS1/16SS104J
R 354	(B,88,64)	RS1/16SS103J
R 355	(B,22,135)	RS1/10S102J
R 356	(A,81,41)	RS1/16SS102J
R 382	(A,101,64)	RS1/16SS153J
R 383	(A,103,60)	RS1/16SS471J
R 385	(A,105,64)	RS1/16SS472J
R 387	(A,108,65)	RS1/16SS223J
R 389	(A,103,79)	RS1/16SS103J
R 391	(A,101,80)	RS1/16SS103J
R 403	(B,108,112)	RS1/16SS473J
R 405	(A,78,41)	RS1/16SS102J
R 407	(A,79,34)	RS1/16SS102J
R 409	(A,80,35)	RS1/16SS102J
R 411	(A,82,35)	RS1/16SS102J
R 413	(A,76,44)	RS1/16SS681J
R 415	(A,82,38)	RS1/16SS102J
R 418	(A,20,42)	RS1/16S0R0J
R 421	(B,24,51)	RS1/16S0R0J
R 426	(A,18,59)	RS1/16SS473J
R 427	(A,18,58)	RS1/16SS473J
R 428	(A,18,57)	RS1/16SS473J
R 431	(A,26,68)	RS1/16SS0R0J
R 433	(A,29,56)	RS1/16SS223J
R 436	(A,96,48)	RS1/16SS473J
R 441	(A,18,60)	RS1/16SS473J
R 442	(A,18,61)	RS1/16SS473J
R 458	(A,22,43)	RS1/16SS332J
R 459	(A,22,45)	RS1/16SS332J
R 461	(B,146,8)	RS1/16SS472J
R 462	(B,148,8)	RS1/16SS472J
R 463	(B,150,8)	RS1/16SS472J
R 464	(B,153,8)	RS1/16SS472J
R 465	(B,89,66)	RS1/16SS222J
R 466	(B,154,8)	RS1/16SS472J
R 467	(B,161,8)	RS1/16SS472J
R 474	(A,87,22)	RS1/16SS222J
R 475	(A,87,20)	RS1/16SS222J
R 476	(A,89,22)	RS1/16SS222J
R 498	(B,99,44)	RS1/16SS473J
R 499	(A,112,40)	RS1/16SS102J
R 500	(A,81,22)	RS1/16SS223J
R 505	(A,81,28)	RS1/16SS102J
R 506	(A,81,26)	RS1/16SS102J
R 507	(A,82,23)	RS1/16SS473J
R 509	(A,84,19)	RS1/16SS102J
R 510	(A,83,22)	RS1/16SS473J
R 520	(A,93,45)	RS1/16SS471J
R 521	(A,89,19)	RS1/16SS102J
R 522	(A,89,17)	RS1/16SS152J
R 523	(A,90,20)	RS1/16SS102J
R 524	(A,90,17)	RS1/16SS102J
R 525	(A,91,20)	RS1/16SS102J
R 526	(B,92,15)	RS1/16SS473J
R 527	(A,94,43)	RS1/16SS471J
R 528	(B,96,43)	RS1/16SS105J
R 529	(A,98,43)	RS1/16SS103J
R 532	(A,101,48)	RS1/16SS471J
R 533	(A,96,43)	RS1/16SS102J
R 534	(A,92,20)	RS1/16SS102J
R 535	(A,92,17)	RS1/16SS102J
R 536	(A,93,17)	RS1/16SS102J
R 537	(A,95,22)	RS1/16SS0R0J
R 538	(A,99,18)	RS1/16SS473J
R 539	(A,100,17)	RS1/16SS471J
R 540	(A,101,17)	RS1/16SS102J
R 542	(B,103,28)	RS1/16SS102J
R 543	(A,100,40)	RS1/16SS102J
R 545	(A,102,41)	RS1/16SS102J
R 547	(A,104,45)	RS1/16SS473J
R 548	(A,105,45)	RS1/16SS102J
R 549	(A,105,47)	RS1/16SS102J
R 550	(A,106,45)	RS1/16SS102J
R 553	(A,102,17)	RS1/16SS102J
R 554	(A,103,17)	RS1/16SS102J
R 555	(A,103,19)	RS1/16SS102J
R 556	(A,105,17)	RS1/16SS102J
R 557	(A,105,19)	RS1/16SS102J
R 558	(A,106,18)	RS1/16SS102J
R 559	(A,107,18)	RS1/16SS102J
R 560	(A,107,21)	RS1/16S0R0J
R 562	(A,110,18)	RS1/16SS473J
R 563	(A,109,17)	RS1/16SS473J
R 564	(A,110,37)	RS1/16SS102J
R 570	(A,110,34)	RS1/16SS102J
R 571	(A,112,34)	RS1/16SS102J
R 572	(A,110,33)	RS1/16SS102J
R 575	(A,112,31)	RS1/16SS471J
R 576	(B,103,40)	RS1/16SS102J
R 578	(A,110,26)	RS1/16SS102J
R 580	(A,110,24)	RS1/16SS102J
R 583	(A,108,24)	RS1/16SS102J
R 584	(A,110,23)	RS1/16SS102J
R 588	(A,108,18)	RS1/16SS103J
R 589	(A,109,23)	RS1/16SS473J
R 590	(A,111,23)	RS1/16SS473J
R 598	(A,95,45)	RS1/16SS102J
R 601	(B,67,86)	RS1/16SS102J
R 602	(B,65,52)	RS1/16SS102J
R 603	(B,71,69)	RS1/16SS103J
R 604	(A,66,87)	RS1/16SS103J
R 605	(A,57,85)	RS1/16SS103J
R 606	(B,70,88)	RS1/16SS103J
R 607	(A,63,84)	RS1/16SS223J
R 608	(A,64,84)	RS1/16SS223J
R 609	(B,47,81)	RS1/16SS7503D
R 610	(A,61,89)	RS1/4SR22J
R 611	(B,46,81)	RS1/16SS1303D
R 612	(B,42,79)	RS1/16SS7503D
R 613	(B,42,78)	RS1/16SS1303D
R 614	(A,38,73)	RS1/16SS750J
R 615	(B,44,60)	RS1/16SS1001D
R 616	(B,42,60)	RS1/16SS1000D
R 617	(B,40,60)	RS1/16SS24R0D
R 618	(B,42,61)	RS1/16SS160J
R 619	(B,63,47)	RS1/16SS103J
R 620	(A,48,71)	RS1/16SS750J
R 621	(B,53,60)	RS1/16SS1001D

Circuit Symbol and No.		Part No.
R 622	(B,54,60)	RS1/16SS1800D
R 623	(B,56,60)	RS1/16SS33R0D
R 624	(B,54,61)	RS1/16SS160J
R 625	(B,63,48)	RS1/16SS103J
R 627	(A,33,83)	RS1/16SS220J
R 633	(B,67,63)	RS1/8S0R0J
R 635	(A,69,87)	RS1/16SS221J
R 636	(B,65,58)	RS1/16SS221J
R 638	(B,41,84)	RS1/16SS1203D
R 639	(B,41,83)	RS1/16SS1502D
R 640	(B,41,82)	RS1/16SS6802D
R 641	(B,41,81)	RS1/16SS1202D
R 644	(A,22,76)	RS1/16SS223J
R 645	(A,33,85)	RS1/10S121J
R 646	(A,34,83)	RS1/16SS102J
R 647	(B,42,77)	RS1/16SS103J
R 648	(B,48,81)	RS1/16SS103J
R 651	(A,42,71)	RS1/16SS100J
R 652	(A,53,71)	RS1/16SS100J
R 701	(B,29,96)	RS1/16SS221J
R 702	(B,30,96)	RS1/16SS471J
R 703	(B,33,96)	RS1/16SS331J
R 704	(A,32,94)	RS1/16SS223J
R 705	(B,34,92)	RS1/16SS471J
R 706	(B,34,96)	RS1/16SS223J
R 707	(B,62,140)	RS1/16SS333J
R 708	(B,65,144)	RS1/16SS223J
R 709	(B,61,140)	RS1/16SS473J
R 710	(B,59,144)	RS1/16SS152J
R 711	(B,57,142)	RS1/16SS222J
R 712	(B,60,138)	RS1/16SS223J
R 713	(B,57,140)	RS1/16SS473J
R 714	(B,72,139)	RS1/16SS153J
R 715	(B,72,140)	RS1/16SS180J
R 716	(B,73,140)	RS1/16SS223J
R 717	(A,157,18)	RS1/16SS470J
R 718	(A,160,21)	RS1/16SS152J
R 719	(A,150,18)	RS1/16SS223J
R 720	(A,162,21)	RS1/16SS472J
R 721	(A,160,18)	RS1/16SS821J
R 722	(A,160,16)	RS1/16SS153J
R 723	(A,163,20)	RS1/16SS470J
R 724	(B,164,16)	RS1/16SS223J
R 725	(A,165,15)	RS1/16SS222J
R 726	(A,164,20)	RS1/16SS472J
R 741	(B,23,83)	RS1/8S511J
R 742	(B,25,83)	RS1/8S511J
R 806	(B,20,101)	RS1/16SS222J
R 807	(B,25,92)	RS1/16SS473J
R 808	(B,26,92)	RS1/16SS471J
R 809	(B,17,87)	RS1/16SS472J
R 810	(B,13,89)	RS1/16SS220J
R 811	(B,12,90)	RS1/16SS223J
R 812	(B,14,94)	RS1/16SS224J
R 814	(B,16,97)	RS1/16SS225J
R 815	(B,20,100)	RS1/16SS182J
R 816	(B,17,84)	RS1/16SS223J
R 817	(B,17,85)	RS1/16SS102J

CAPACITORS

Circuit Symbol and No.		Part No.
C 11	(B,163,106)	CCSSCJ3R0C50
C 12	(A,159,101)	CCSSCH220J50
C 14	(A,142,71)	CKSSYB102K50
C 36	(B,163,109)	CCSSCJ3R0C50
C 37	(A,159,110)	CCSSCH220J50
C 39	(A,142,88)	CKSSYB102K50
C 61	(B,164,113)	CKSSYB103K16
C 62	(B,163,113)	CCSSCH101J50
C 102	(B,158,85)	CKSSYB222K50
C 103	(B,154,87)	CKSSYB104K10
C 106	(A,150,40)	CKSSYB103K16
C 107	(A,150,45)	CEVW101M16
C 108	(B,157,28)	CKSSYB332K50
C 109	(B,157,31)	CKSSYB332K50
C 111	(A,150,65)	CCSSCH101J50
C 112	(A,150,71)	CEVW101M16
C 113	(A,151,65)	CKSSYB103K16
C 115	(A,152,53)	CSZSR470M10
C 116	(A,149,55)	CKSSYB103K16
C 118	(A,152,58)	CSZSR470M10
C 119	(A,149,60)	CKSSYB103K16
C 130	(A,158,101)	CKSSYB103K16
C 149	(B,104,89)	CKSRYB105K10
C 150	(B,148,66)	CKSSYB222K50
C 152	(B,106,89)	CKSRYB105K10
C 154	(B,134,50)	CKSSYB222K50
C 201	(B,38,114)	CCSQCH471J50
C 202	(B,46,114)	CCSQCH471J50
C 203	(B,43,114)	CCSQCH471J50
C 204	(B,49,114)	CCSQCH471J50
C 205	(B,99,105)	CKSRYB105K10
C 206	(B,97,105)	CKSRYB105K10
C 207	(B,95,105)	CKSRYB105K10
C 208	(B,93,105)	CKSRYB105K10
C 209	(B,94,102)	CCSSCH220J50
C 210	(B,97,102)	CCSSCH220J50
C 211	(B,94,99)	CCSSCH220J50
C 212	(B,99,99)	CCSSCH220J50
C 213	(B,107,94)	CKSSYB102K50
C 214	(B,103,94)	CKSSYB102K50
C 215	(A,106,97)	CCSSCH220J50
C 216	(B,102,100)	CCSSCH220J50
C 216	(B,102,100)	CCSSCH220J50
C 217	(B,97,92)	CCSSCH220J50
C 218	(B,94,92)	CCSSCH220J50
C 220	(B,87,99)	CCSSCH220J50
C 222	(B,90,99)	CCSSCH220J50
C 223	(B,87,94)	CCSSCH220J50
C 224	(B,84,96)	CKSRYB105K10
C 225	(B,89,94)	CCSSCH220J50
C 226	(A,97,87)	CKSRYB105K10
C 227	(A,95,87)	CKSRYB105K10
C 243	(A,105,79)	CKSSYB103K16
C 244	(A,105,75)	CEVW470M16
C 245	(B,89,79)	CCSSCH220J50
C 246	(B,90,70)	CCSSCH220J50
C 249	(B,94,79)	CCSSCH220J50
C 250	(B,95,70)	CCSSCH220J50
C 251	(A,97,73) 10µF/16V	CCH1585
C 252	(A,97,68) 10µF/16V	CCH1585

Circuit Symbol and No.		Part No.
C 253	(A,95,78) 10µF/16V	CCH1585
C 254	(A,95,82) 10µF/16V	CCH1585
C 255	(A,75,117)	CKSQYB103K50
C 256	(A,71,117)	CKSQYB103K50
C 257	(A,73,117)	CKSQYB103K50
C 258	(A,69,117)	CKSQYB103K50
C 301	(B,54,116)	CKSQYB222K50
C 302	(B,35,141)	CKSQYB223K50
C 303	(B,46,139)	CKSQYB473K50
C 304	(B,50,138)	CKSQYB103K50
C 305	(B,39,141)	CKSQYB223K50
C 306	(B,50,140)	CKSQYB473K50
C 308	(B,75,133)	CKSQYB222K50
C 310	(B,57,135)	CKSQYB223K50
C 311	(B,57,137)	CKSQYB223K50
C 316	(A,89,58)	CKSSYB104K10
C 317	(B,88,61)	CKSRYB474K10
C 318	(B,92,29)	CKSSYB104K10
C 320	(B,40,139)	CCSQCH181J50
C 321	(B,33,139)	CCSQCH181J50
C 322	(B,61,115)	CKSSYB102K50
C 324	(B,30,140)	CKSRYB103K50
C 325	(A,81,20)	CKSRYB105K10
C 326	(A,79,20)	CKSRYB105K10
C 327	(B,59,137)	CKSSYB472K25
C 328	(B,21,144)	CKSRYB104K50
C 329	(B,22,139)	CKSRYB102K50
C 330	(B,20,139)	CKSQYB102K50
C 331	(B,18,139)	CKSQYB102K50
C 332	(B,88,62)	CKSSYB103K16
C 333	(B,75,136)	CKSQYB102K50
C 334	(B,73,136)	CKSQYB102K50
C 382	(A,106,68)	CKSSYB102K50
C 384	(A,102,66)	CKSQYB225K10
C 385	(A,83,73) 10µF/16V	CCH1585
C 386	(A,83,68) 10µF/16V	CCH1585
C 387	(A,83,78) 10µF/16V	CCH1585
C 388	(A,83,83) 10µF/16V	CCH1585
C 401	(A,28,55)	CKSQYB225K10
C 402	(A,32,59)	CEVW100M16
C 403	(B,102,102)	CKSRYB105K10
C 404	(B,102,100)	CKSRYB105K10
C 405	(A,25,42)	CEVW100M10
C 406	(A,25,47)	CEVW100M10
C 409	(B,147,8)	CKSSYB102K50
C 410	(B,149,8)	CKSSYB102K50
C 411	(B,151,8)	CKSSYB102K50
C 412	(B,152,8)	CKSSYB102K50
C 413	(B,155,8)	CCSSCH101J50
C 414	(B,156,8)	CCSSCH101J50
C 415	(B,157,8)	CCSSCH101J50
C 416	(B,158,8)	CCSSCH101J50
C 417	(B,159,8)	CCSSCH101J50
C 418	(B,160,8)	CCSSCH101J50
C 419	(B,162,8)	CKSSYB102K50
C 420	(B,163,8)	CCSSCH101J50
C 423	(B,26,35)	CKSSYB102K50
C 445	(B,87,66)	CKSSYB104K10
C 446	(A,90,69)	CEVW101M16
C 502	(B,98,41)	CSZSR470M10
C 503	(B,96,40)	CKSSYB102K50
C 504	(A,98,21)	CKSSYB104K10
C 509	(A,86,22)	CKSSYB472K25
C 512	(B,151,90)	CKSSYB223K16
C 602	(B,70,86)	CKSRYB104K50
C 603	(A,29,73) 470µF/16V	CCH1677
C 604	(B,61,78)	CKSYB225K16
C 605	(A,93,140) 1000µF/16V	CCH1681(P45)
C 606	(A,62,86)	CKSQYB105K16
C 607	(A,66,56)	CEVLW470M16
C 608	(A,46,80) 10µF	CCG1182
C 609	(A,47,77) 10µF	CCG1182
C 610	(A,45,77) 10µF	CCG1182
C 611	(A,37,77)	CKSRYB154K10
C 612	(A,38,74)	CKSSYB123K16
C 613	(A,44,71)	CKSSYB104K10
C 614	(A,40,71)	CKSRYB105K10
C 615	(B,44,56) 10µF	CCG1182
C 616	(B,44,58) 10µF	CCG1182
C 617	(B,44,61)	CKSSYB473K10
C 620	(A,48,9)	CKSSYB102K50
C 621	(B,37,88)	CKSSYB102K50
C 622	(B,37,86)	CSZSR470M10
C 623	(B,34,84)	CKSRYB474K10
C 626	(A,56,80) 10µF	CCG1182
C 627	(A,47,72)	CKSRYB154K10
C 628	(A,48,73)	CKSSYB123K16
C 629	(A,55,71)	CKSSYB104K10
C 630	(A,51,71)	CKSRYB105K10
C 631	(B,53,56) 10µF	CCG1171
C 632	(B,53,58) 10µF	CCG1171
C 633	(B,53,61)	CKSSYB473K10
C 634	(A,58,77) 10µF	CCG1182
C 635	(A,56,77) 10µF	CCG1182
C 636	(A,30,78)	CKSRYB103K50
C 637	(A,34,85)	CKSSYB103K16
C 640	(B,66,54)	CKSRYB104K50
C 701	(B,133,138)	CKSRYB473K50
C 702	(B,131,138)	CKSRYB473K50
C 703	(A,152,141) 2200µF/16V	CCH1676(P45)
C 704	(A,27,88)	CKSRYB474K10
C 705	(A,24,83) 470µF/16V	CCH1677
C 706	(B,32,96)	CKSSYB102K50
C 707	(B,64,132)	CKSQYB103K50
C 708	(B,70,132)	CKSQYB103K50
C 709	(A,150,15)	CKSRYB104K50
C 710	(A,161,21)	CKSSYB104K10
C 711	(A,159,16)	CKSQYB105K16
C 712	(A,165,16)	CKSSYB104K10
C 719	(B,59,143)	CKSSYB103K16
C 721	(A,113,58)	CKSSYB102K50
C 724	(A,138,12)	CKSSYB102K50
C 751	(B,27,87)	CKSSYB272K50
C 761	(B,125,138)	CKSRYB473K50
C 762	(B,127,138)	CKSRYB473K50
C 763	(A,104,141) 3300µF/16V	CCH1486(P45)
C 764	(A,23,99)	CSZSC101M10
C 765	(B,25,87)	CKSRYB473K50
C 766	(A,11,100)	CKSRYB105K10
C 767	(B,15,85)	CCSSCH221J50

Circuit Symbol and No.		Part No.
C 768	(B,17,91)	CKSYB475K16
C 769	(B,16,98)	CKSSYB104K10
C 770	(B,23,91)	CKSYB225K16
C 771	(B,15,81)	CKSRYB105K10

Keyboard Unit
Consists of
Keyboard PCB
L PCB
R PCB

B E F

Unit Number :

Unit Name : Keyboard Unit

MISCELLANEOUS

IC 801	(B,77,74)	IC	LC75804W
Q 801	(B,201,81)	Transistor	2SA1235A-12
Q 802	(B,201,84)	Transistor	2SA1235A-12
Q 803	(B,20,83)	Transistor	2SA1235A-12
Q 804	(B,20,79)	Transistor	2SA1235A-12
Q 805	(B,62,39)	Transistor	2SA1235A-12
Q 806	(B,157,47)	Transistor	2SA1235A-12
Q 808	(B,157,50)	Transistor	2SA1235A-12
Q 809	(B,20,86)	Transistor	2SA1235A-12
Q 810	(B,201,88)	Transistor	2SA1235A-12
Q 811	(B,58,39)	Transistor	2SA1235A-12
Q 812	(B,84,16)	Transistor	2SA1235A-12
Q 813	(B,139,16)	Transistor	2SA1235A-12
Q 814	(B,173,26)	Transistor	2SA1235A-12
Q 815	(B,166,30)	Transistor	2SC4081
Q 816	(B,46,82)	Transistor	DTC114EU
Q 817	(B,186,95)	Transistor	2SC4081
Q 819	(B,151,79)	Transistor	2SA1037K
Q 820	(B,143,78)	Transistor	DTC143EK
Q 823	(B,151,74)	Transistor	2SA1037K
Q 824	(B,143,74)	Transistor	DTC143EK
Q 825	(B,160,39)	Transistor	2SB1132
Q 826	(B,167,37)	Transistor	2SC4081
D 801	(A,60,55)	LED	NHSB046R8-5293
D 802	(A,80,55)	LED	NHSB046R8-5293
D 803	(A,100,55)	LED	NHSB046R8-5293
D 804	(A,120,55)	LED	NHSB046R8-5293
D 806	(A,160,55)	LED	NHSB046R8-5293
D 807	(A,140,55)	LED	NHSB046R8-5293
D 808	(A,20,99)	LED	NHSB046R8-5291
D 809	(A,14,83)	LED	NHSB046R8-5292
D 810	(A,200,99)	LED	NHSB046R8-5291
D 811	(A,206,83)	LED	NHSB046R8-5292
D 812	(A,59,31)	LED	NHSB046R11-5295
D 813	(A,161,31)	LED	NHSB046R11-5295
D 814	(A,68,17)	LED	NHSB046R8-5294
D 815	(A,96,17)	LED	NHSB046R8-5294
D 816	(A,124,17)	LED	NHSB046R8-5294
D 817	(A,152,17)	LED	NHSB046R8-5294
D 818	(B,169,29)	Diode	UDZS5R1(B)
D 819	(A,40,92)	LED	SML-310DT
D 820	(A,180,92)	LED	SML-310DT

Circuit Symbol and No.			Part No.
D 821	(A,40,96)	LED	SML-310FC
D 822	(A,180,96)	LED	SML-310FC
D 823	(A,36,77)	LED	NESW017-5248
D 824	(A,36,70)	LED	NESW017-5248
D 825	(A,184,77)	LED	NESW017-5248
D 832	(A,184,70)	LED	NESW017-5248
D 833	(B,54,69)	Diode	HZU4R7(B3)
D 834	(B,59,27)	Diode	1SS355
D 835	(B,63,22)	Diode	1SS355
D 836	(B,69,22)	Diode	1SS355
D 837	(B,155,29)	Diode	1SS355
D 838	(B,155,26)	Diode	1SS355
D 839	(B,168,42)	Diode	1SS355
D 840	(B,66,49)	Diode	1SS355
D 841	(B,167,76)	Diode	1SS355
D 843	(B,25,90)	Diode	1SS355
D 844	(B,66,47)	Diode	1SS355
D 845	(B,167,74)	Diode	1SS355
D 846	(B,193,87)	Diode	1SS355
D 847	(B,25,94)	Diode	1SS355
D 848	(B,66,45)	Diode	1SS355
D 849	(B,167,72)	Diode	1SS355
D 850	(B,193,89)	Diode	1SS355
D 980	(A,49,42)	LED	NHSB046R8-5292
D 981	(A,26,90)	LED	NHSB046R8-5291
D 982	(A,30,72)	LED	NHSB046R8-5292
D 983	(A,49,20)	LED	NHSB046R8-5292
D 984	(B,22,72)	Diode	1SS355
D 985	(B,22,74)	Diode	1SS355
D 986	(B,22,76)	Diode	1SS355
D 990	(A,30,73)	LED	NHSB046R8-5292
D 991	(A,34,90)	LED	NHSB046R8-5291
D 992	(A,10,20)	LED	NHSB046R8-5292
D 993	(A,10,42)	LED	NHSB046R8-5292
D 994	(B,36,69)	Diode	1SS355
D 995	(B,36,71)	Diode	1SS355
D 996	(B,36,67)	Diode	1SS355
L 801	(B,52,64)	Inductor	CTF1529
S 980	(A,49,31)	Encoder(POWER VOL)	CSD1133
S 993	(A,10,31)	Encoder(FILE TUNE)	CSD1132
LCD801	(A,63,86)	LCD	CAW1867

RESISTORS

R 801	(B,197,82)	RS1/16S391J
R 802	(B,197,85)	RS1/16S821J
R 803	(B,24,82)	RS1/16S391J
R 804	(B,24,78)	RS1/16S821J
R 805	(B,63,43)	RS1/16S391J
R 806	(B,161,46)	RS1/16S391J
R 809	(B,161,49)	RS1/16S391J
R 810	(B,24,85)	RS1/16S391J
R 811	(B,197,89)	RS1/16S391J
R 814	(B,59,43)	RS1/16S391J
R 817	(B,80,17)	RS1/16S391J
R 820	(B,135,17)	RS1/16S391J
R 823	(B,174,29)	RS1/16S331J
R 825	(B,168,27)	RS1/16S561J
R 826	(B,167,34)	RS1/16S271J
R 829	(B,165,34)	RS1/16S223J

Circuit Symbol and No.		Part No.
R 831	(B,164,31)	RS1/16S472J
R 836	(B,49,81)	RS1/16S222J
R 837	(B,53,31)	RS1/16S100J
R 838	(B,52,28)	RS1/16S100J
R 839	(B,51,31)	RS1/16S100J
R 840	(B,50,28)	RS1/16S100J
R 845	(B,190,95)	RS1/16S222J
R 846	(B,189,95)	RS1/16S103J
R 847	(B,154,80)	RS1/10S101J
R 848	(B,156,80)	RS1/10S151J
R 849	(B,186,93)	RS1/16S391J
R 853	(B,146,79)	RS1/16S332J
R 854	(B,147,79)	RS1/16S103J
R 857	(B,154,74)	RS1/10S101J
R 858	(B,156,74)	RS1/10S151J
R 863	(B,146,74)	RS1/16S332J
R 864	(B,53,71)	RS1/16S471J
R 865	(B,147,74)	RS1/16S103J
R 866	(B,61,80)	RS1/16S102J
R 867	(B,61,79)	RS1/16S102J
R 868	(B,61,77)	RS1/16S102J
R 869	(B,61,76)	RS1/16S102J
R 870	(B,61,74)	RS1/16S681J
R 871	(B,65,77)	RS1/16S393J
R 872	(B,136,73)	RS1/16S102J
R 873	(B,136,72)	RS1/16S102J
R 874	(B,136,70)	RS1/16S102J
R 875	(B,136,69)	RS1/16S102J
R 876	(B,145,68)	RS1/16S102J
R 877	(B,145,67)	RS1/16S102J
R 878	(B,145,65)	RS1/16S102J
R 879	(B,145,64)	RS1/16S102J
R 880	(B,145,62)	RS1/16S102J
R 881	(B,145,61)	RS1/16S102J
R 882	(B,45,79)	RS1/10S391J
R 883	(B,43,77)	RS1/10S391J
R 886	(B,45,73)	RS1/10S391J
R 887	(B,43,75)	RS1/10S391J
R 888	(B,174,75)	RS1/10S391J
R 889	(B,179,75)	RS1/10S391J
R 891	(B,174,73)	RS1/10S391J
R 892	(B,179,73)	RS1/10S391J
R 893	(B,57,67)	RS1/16S222J
R 894	(B,166,39)	RS1/16S562J
R 895	(B,56,80)	RS1/16S223J
R 896	(B,56,79)	RS1/16S223J
R 897	(B,56,77)	RS1/16S223J
R 898	(B,171,37)	RS1/16S223J
R 899	(B,164,39)	RS1/16S103J
R 900	(B,163,36)	RS1/16S472J
R 901	(B,57,70)	RS1/16S222J
R 902	(B,60,70)	RS1/16S222J
R 904	(B,60,24)	RS1/16S100J
R 906	(B,63,24)	RS1/16S100J
R 908	(B,159,31)	RS1/16S100J
R 910	(B,159,28)	RS1/16S100J
R 912	(B,197,80)	RS1/16S102J
R 913	(B,197,83)	RS1/16S102J
R 914	(B,24,84)	RS1/16S102J
R 915	(B,24,80)	RS1/16S102J
R 916	(B,61,43)	RS1/16S102J
R 917	(B,161,48)	RS1/16S102J
R 918	(B,161,51)	RS1/16S102J
R 919	(B,24,87)	RS1/16S102J
R 920	(B,197,87)	RS1/16S102J
R 921	(B,57,43)	RS1/16S102J
R 922	(B,80,15)	RS1/16S102J
R 923	(B,135,15)	RS1/16S102J

CAPACITORS

C 801	(B,170,27)	CKSRYB473K50
C 802	(B,164,34)	CKSRYB472K50
C 803	(B,170,34)	CKSRYB104K25
C 804	(B,168,34)	CKSRYB104K25
C 809	(B,66,77)	CKSRYB102K50
C 810	(B,61,72)	CKSRYB104K25
C 811	(B,54,67)	CKSRYB104K25
C 812	(B,53,80)	CCSRCH101J50
C 814	(B,53,77)	CCSRCH101J50
C 816	(B,56,74)	CKSRYB103K50
C 817	(B,57,69)	CKSRYB104K25
C 820	(B,169,37)	CKSRYB472K50
C 823	(B,57,72)	CKSRYB104K25
C 980	(B,51,17)	CCSRCH101J50
C 981	(B,48,17)	CCSRCH101J50
C 993	(B,12,18)	CCSRCH101J50
C 994	(B,9,18)	CCSRCH101J50

C

Unit Number : CWX3138
Unit Name : Control Unit

MISCELLANEOUS

IC 201	(A,44,26)	IC	UPD63763AGJ
IC 202	(B,62,32)	IC	MSM56V16160F8TKFM
IC 203	(A,63,11)	IC	NJM2885DL1-33
IC 301	(A,67,22)	IC	BA6859AFP-Y
IC 302	(A,65,38)	IC	BD7962FM
IC 701	(B,16,23)	IC	PE5455A
IC 702	(A,5,24)	IC	BR93L56RFVM-W
IC 703	(A,20,26)	IC	S-812C33AMC-C2N
Q 101	(A,41,44)	Transistor	2SB1132
Q 601	(B,32,11)	Transistor	IMH20
Q 602	(B,40,11)	Transistor	2SB709A
Q 701	(A,15,24)	Transistor	UMF21N
D 201	(B,72,11)	Diode	1SR154-400
D 202	(B,72,14)	Diode	1SR154-400
D 601	(B,37,11)	Diode	M1MA152WAT1G
L 102	(A,31,45)	Inductor	CTF1389
L 206	(A,40,12)	Inductor	CTF1645
X 201	(A,42,9)	Ceramic Resonator 16.934MHz	CSS1603
X 701	(B,16,11)	Ceramic Resonator 4MHz	CSS1652

RESISTORS

R 101	(A,15,37)	RS1/10SR471J
R 102	(A,16,37)	RS1/10SR331J
R 103	(A,49,45)	RS1/10SR2R7J
R 104	(A,47,45)	RS1/10SR2R4J
R 105	(A,46,45)	RS1/10SR2R4J

Circuit Symbol and No.		Part No.
R 108	(B,34,30)	RS1/16SS272J
R 201	(B,44,35)	RS1/16SS393J
R 202	(B,44,36)	RS1/16SS103J
R 203	(A,38,39)	RS1/16SS222J
R 204	(A,34,39)	RS1/16SS562J
R 205	(A,35,36)	RS1/16SS472J
R 207	(A,36,37)	RS1/16SS101J
R 208	(B,51,20)	RS1/16SS333J
R 209	(B,46,39)	RS1/16SS472J
R 212	(B,47,39)	RS1/16SS472J
R 214	(A,50,40)	RS1/16SS103J
R 215	(A,28,23)	RS1/16SS102J
R 216	(A,48,41)	RS1/16SS472J
R 218	(A,50,39)	RS1/16SS103J
R 219	(A,49,39)	RS1/16SS472J
R 221	(B,33,21)	RS1/16SS333J
R 222	(B,36,18)	RS1/16SS221J
R 223	(A,49,12)	RS1/16SS333J
R 224	(A,47,11)	RS1/16SS333J
R 227	(B,51,22)	RS1/16SS271J
R 229	(A,41,41)	RS1/16SS0R0J
R 237	(A,37,14)	RS1/16SS0R0J
R 238	(B,43,14)	RS1/16SS0R0J
R 239	(A,44,9)	RS1/16SS0R0J
R 301	(B,47,21)	RS1/16SS221J
R 302	(A,71,46)	RS1/16SS473J
R 303	(B,68,46)	RS1/16SS473J
R 304	(A,72,44)	RS1/16SS333J
R 305	(B,68,43)	RS1/16SS822J
R 306	(B,67,43)	RS1/16SS822J
R 307	(B,67,41)	RS1/16SS333J
R 308	(A,70,16)	RS1/16SS102J
R 309	(B,45,23)	RS1/16SS102J
R 310	(A,61,16)	RS1/16SS221J
R 311	(B,65,44)	RS1/16SS822J
R 312	(B,63,42)	RS1/16SS822J
R 313	(B,65,43)	RS1/16SS273J
R 314	(B,61,42)	RS1/16SS183J
R 315	(B,70,42)	RAB4CQ103J
R 316	(A,73,16)	RS1/10SR1R0J
R 317	(A,73,14)	RS1/10SR2R2J
R 319	(A,71,30)	RS1/16SS393J
R 320	(A,63,30)	RS1/16SS333J
R 321	(A,69,30)	RS1/16SS273J
R 322	(A,65,30)	RS1/16SS183J
R 323	(A,73,45)	RS1/16SS822J
R 601	(A,33,9)	RS1/16SS101J
R 602	(A,32,13)	RS1/16SS101J
R 603	(B,35,9)	RS1/16SS223J
R 604	(A,32,15)	RS1/16SS223J
R 605	(B,33,14)	RS1/16SS103J
R 606	(B,33,13)	RS1/16SS0R0J
R 701	(A,23,20)	RS1/16SS103J
R 702	(A,24,22)	RS1/16SS103J
R 703	(A,21,23)	RS1/16SS184J
R 704	(A,21,20)	RS1/16SS223J
R 705	(B,32,23)	RAB4CQ221J
R 706	(B,28,20)	RS1/16SS221J
R 707	(A,14,15)	RS1/16SS473J
R 708	(A,26,17)	RS1/16SS103J

Circuit Symbol and No.		Part No.
R 709	(A,12,26)	RS1/16SS103J
R 710	(B,26,17)	RS1/16SS473J
R 711	(B,27,17)	RS1/16SS123J
R 712	(B,29,22)	RAB4CQ221J
R 713	(B,28,31)	RAB4CQ221J
R 714	(A,12,25)	RS1/16SS272J
R 715	(A,19,15)	RS1/16SS473J
R 716	(B,20,34)	RS1/16SS221J
R 717	(B,19,33)	RS1/16SS221J
R 718	(B,18,33)	RS1/16SS221J
R 719	(B,17,36)	RS1/16SS473J
R 720	(B,16,33)	RS1/16SS102J
R 721	(A,15,15)	RS1/16SS102J
R 723	(B,13,9)	RS1/16SS473J
R 724	(B,15,33)	RS1/16SS471J
R 725	(B,12,9)	RS1/16SS473J
R 726	(A,12,18)	RS1/16SS472J
R 729	(A,12,15)	RS1/16SS0R0J
R 731	(B,9,33)	RS1/16SS473J
R 732	(B,10,9)	RS1/16SS221J
R 735	(A,9,25)	RS1/16SS472J
R 736	(A,9,24)	RS1/16SS473J
R 740	(A,7,14)	RS1/16SS104J
R 742	(A,12,22)	RS1/16SS103J
R 743	(A,21,30)	RS1/16SS103J
R 744	(A,20,31)	RS1/16SS103J
R 745	(B,12,7)	RS1/16SS104J
R 747	(A,11,28)	RS1/16SS104J
R 749	(A,13,30)	RS1/16SS104J
R 901	(B,17,4)	RS1/16SS221J
R 902	(B,18,6)	RS1/16SS221J
R 903	(A,9,13)	RS1/16SS102J
R 904	(B,15,6)	RS1/16SS101J
R 906	(B,20,4)	RS1/16SS221J
R 909	(A,20,22)	RS1/16SS473J
R 912	(A,8,18)	RS1/16SS0R0J

CAPACITORS

C 102	(B,25,37)		CKSSYB104K10
C 103	(A,37,46)		CKSSYB104K10
C 104	(A,35,43)		CSZS150M6R3
C 201	(B,44,33)		CKSSYB182K50
C 202	(B,43,33)		CKSSYB473K10
C 203	(A,38,38)		CKSSYB104K10
C 204	(B,32,29)		CKSSYB102K50
C 205	(A,33,39)		CCSSCH5R0C50
C 206	(A,40,39)		CKSSYB152K50
C 207	(A,35,39)		CCSSCH330J50
C 208	(A,33,34)	0.47µF	CCG1213
C 209	(B,35,28)		CKSSYB103K16
C 210	(A,27,31)		CCSSCH470J50
C 211	(A,29,29)		CKSSYB682K25
C 212	(A,43,41)		CKSSYB104K10
C 213	(A,38,37)		CKSSYB104K10
C 214	(A,29,31)		CCSSCH680J50
C 216	(A,50,41)		CKSSYB152K50
C 217	(A,29,24)		CKSSYB104K10
C 218	(A,29,22)		CKSSYB102K50

Circuit Symbol and No.		Part No.
C 219	(A,51,39)	CKSSYB102K50
C 220	(A,51,37)	CKSSYB104K10
C 221	(B,51,24)	CKSSYB104K10
C 222	(A,36,16)	CKSSYB104K10
C 223	(B,62,24)	CKSSYB104K10
C 225	(A,36,15)	CKSSYB104K10
C 226	(A,36,11)	CKSRYB105K6R3
C 227	(B,36,13)	CKSSYB103K16
C 228	(B,67,24)	CKSSYB104K10
C 230	(B,42,15)	CKSSYB104K10
C 231	(A,40,11)	CKSSYB104K10
C 232	(B,69,24)	CKSSYB104K10
C 233	(A,54,15)	CKSSYB104K10
C 234	(A,53,9)	CKSRYB105K6R3
C 235	(B,58,20)	CEVW221M4
C 237	(B,57,9)	CKSSYB104K10
C 238	(A,71,6)	CKSRYB474K10
C 242	(B,65,40)	CKSSYB104K10
C 243	(B,47,41)	CKSSYB104K10
C 246	(A,75,8) 4.7µF/6.3V	CCG1212
C 301	(B,61,43)	CKSSYB221K50
C 302	(B,65,42)	CCSSCH151J50
C 303	(A,63,16)	CKSSYB104K10
C 304	(A,60,31)	CKSQYB475K10
C 305	(B,67,20)	CEVW101M10
C 306	(A,71,31)	CKSSYB472K25
C 307	(A,63,31)	CKSSYB103K16
C 601	(A,36,9)	CKSQYB475K6R3
C 602	(A,35,13)	CKSQYB475K6R3
C 603	(A,33,10)	CCSRCH102J50
C 604	(A,33,15)	CCSRCH102J50
C 701	(A,14,22)	CKSRYB104K25
C 703	(B,41,20)	CKSSYB103K16
C 704	(B,38,20)	CKSSYB103K16
C 705	(B,41,19)	CKSSYB103K16
C 706	(B,38,19)	CKSSYB103K16
C 709	(A,23,15)	CKSRYB105K6R3
C 711	(B,20,33)	CKSSYB104K10
C 712	(A,20,15)	CKSSYB103K16
C 713	(A,17,19)	CKSQYB475K6R3
C 714	(A,14,18)	CKSSYB102K50
C 715	(A,8,20)	CKSSYB104K10
C 717	(A,16,27)	CKSRYB105K6R3
C 718	(A,23,25)	CKSSYB103K16
C 719	(A,22,18)	CKSSYB103K16
C 901	(A,15,33)	CKSSYB104K10
C 902	(A,27,17)	CKSSYB104K10
C 903	(B,29,10)	CKSSYB104K10
C 904	(B,73,8)	CKSSYB104K10
C 905	(B,60,42)	CKSSYB104K10
C 906	(B,8,5)	CKSSYB104K10

D

Unit Number : CWX2986
Unit Name : RPS PCB Assy

MISCELLANEOUS

VR11	(A,8,10) Semi-fixed 1kΩ(B)	CCP1442
VR12	(A,9,23) Semi-fixed 1kΩ(B)	CCP1442

Circuit Symbol and No.		Part No.
R 11	(A,8,15)	RS1/16S562J
R 12	(A,10,15)	RS1/16S472J
R 13	(A,8,18)	RS1/16S562J
R 14	(A,9,6)	RS1/16S562J

G

Unit Number : EWM1055
Unit Name : Deck Unit

MISCELLANEOUS

IC 251	IC	HA12216F
IC 351	IC	BA6923FP
Q 271	Transistor	2SC4116
VR301	Semi-fixed 33kΩ(B)	CCP1280
VR302	Semi-fixed 33kΩ(B)	CCP1280

RESISTORS

R 255	RS1/16S181J
R 256	RS1/16S181J
R 257	RS1/16S183J
R 258	RS1/16S183J
R 259	RS1/16S133J
R 260	RS1/16S133J
R 261	RS1/16S274J
R 262	RS1/16S274J
R 271	RS1/16S183J
R 272	RS1/8S0R0J
R 273	RS1/16S0R0J
R 275	RS1/16S473J
R 276	RS1/16S104J
R 277	RS1/16S224J
R 278	RS1/16S104J
R 281	RS1/8S0R0J
R 282	RS1/8S0R0J
R 283	RS1/8S0R0J
R 284	RS1/8S0R0J
R 287	RS1/8S0R0J
R 288	RS1/8S0R0J
R 292	RS1/8S0R0J
R 296	RS1/16S0R0J
R 321	RS1/8S0R0J
R 361	RS1/16S0R0J
R 362	RS1/8S301J
R 401	RS1/16S153J
R 402	RS1/16S332J
R 403	RS1/16S911J
R 404	RS1/16S274J

CAPACITORS

C 251	CKSRYB391K50
C 252	CKSRYB391K50
C 253	CKSRYB391K50
C 254	CKSRYB391K50
C 255	CKSRYB103K50
C 256	CKSRYB103K50
C 271	CEH1R0M50
C 272	CKSRYB104K25
C 301	CKSRYB104K25
C 302	CKSRYB104K25

Circuit Symbol and No.	Part No.
C 309	CKSRYB104K25
C 310	CKSRYB104K25
C 351	CKSQYB224K16
C 352	CKSRYB472K50
C 353	CKSRYB103K50
C 354	CKSRYB103K50
C 355	CKSQYB104K50
C 401	CKSRYB392K50
C 402	CKSRYB334K10
C 403	CKSRYB223K25
C 404	CKSRYB103K50
C 405	CKSRYB333K16

H

Unit Number : EWM1057
Unit Name : Sensor Unit

MISCELLANEOUS

L 101	Inductor	CTF1546
L 102	Inductor	CTF1546
S 101	Switch(LOAD)	ESG1007
S 102	Switch(MODE)	ESG1007
S 103	Switch(70μS)	ESG1007
Q 101	Photo-reflector	EGN1004

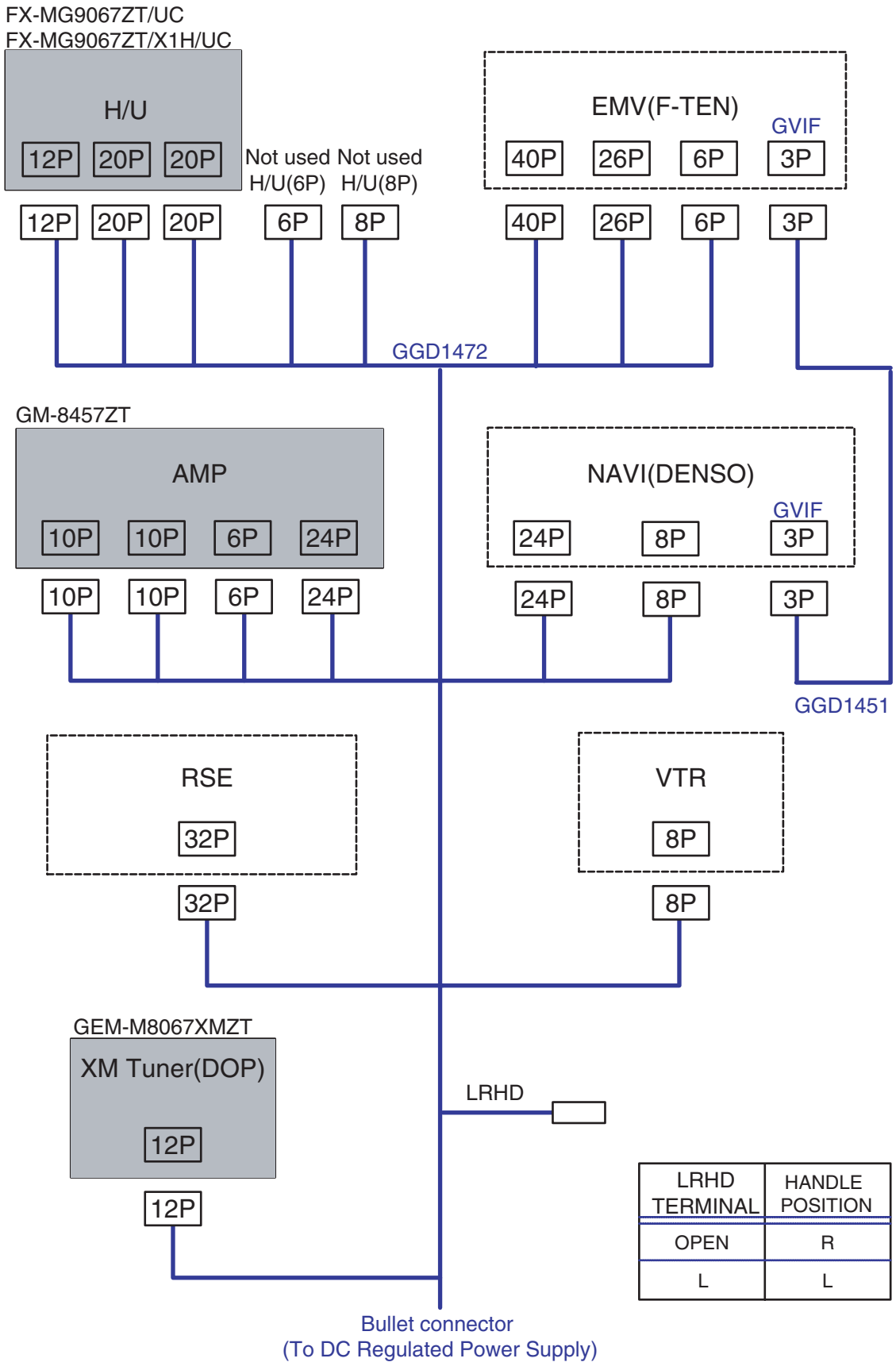
Miscellaneous Parts List

M 1	Motor Unit(MAIN)	EXA1618
M 2	Motor Unit(SUB)	EXA1660
HD1	Head Assy	EXA1594
	Stage Assy(Service)	CXX1969
M 1	Cam Motor Assy(CAM)	CXC5904
M 2	ELV Motor Assy(ELV)	CXC5906
VR13	Variable Resistor 10kΩ(B)	CCW1029

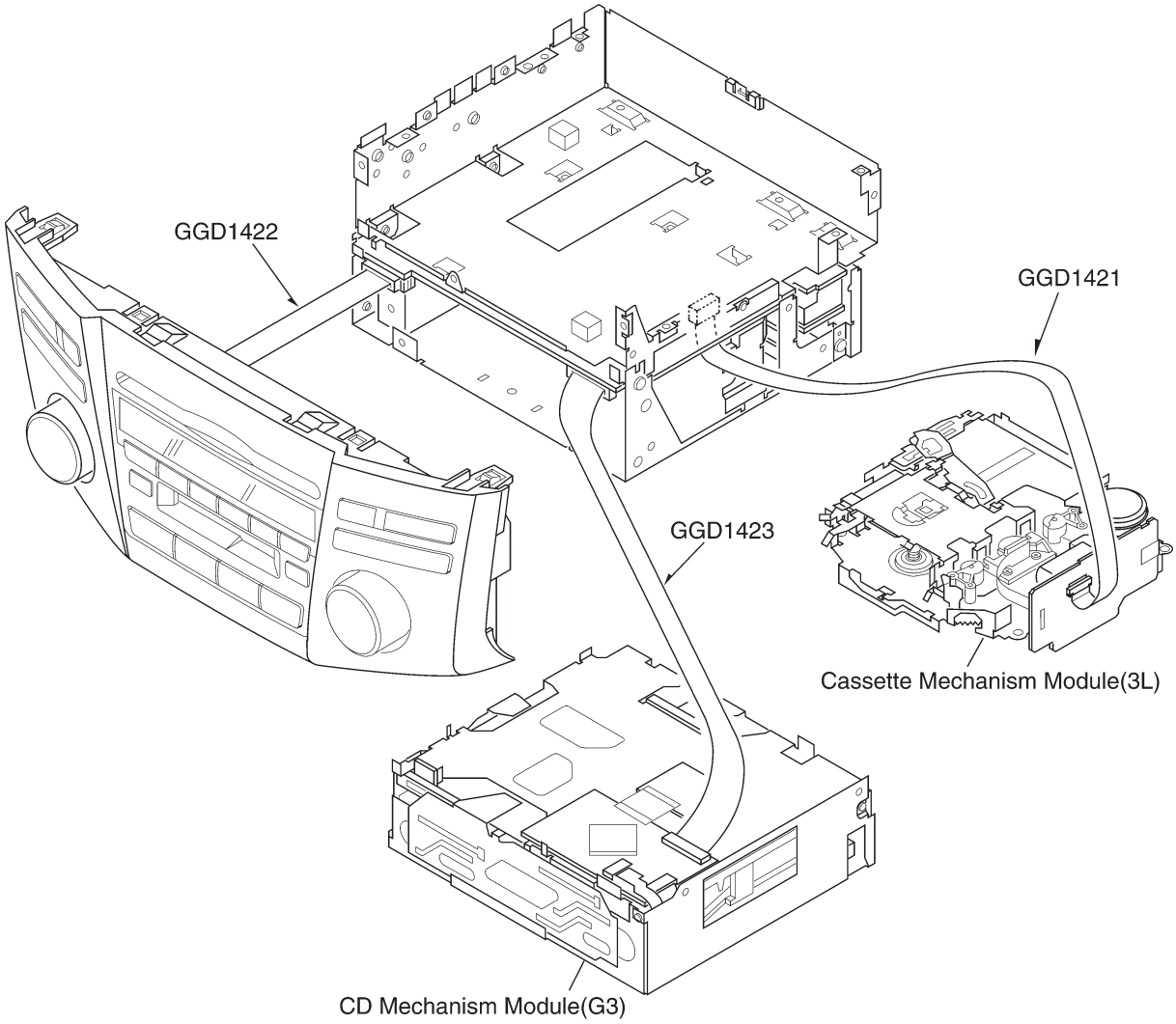
6. ADJUSTMENT

6.1 JIG CONNECTION DIAGRAM

● **Connection Diagram**

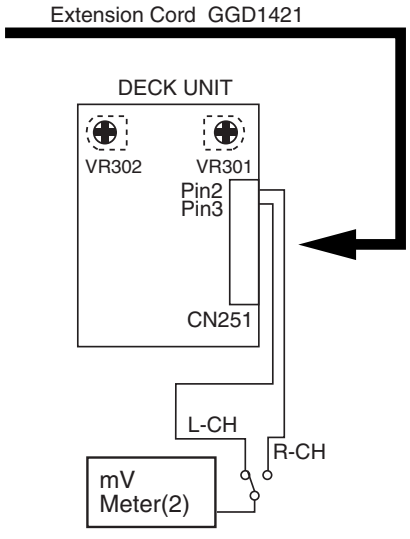


LRHD TERMINAL	HANDLE POSITION
OPEN	R
L	L



Note) Do not insert, reject or change discs when the mechanism is placed upside down.

6.2 DOLBY ADJUSTMENT



DOLBY B NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301(Lch), VR302(Rch) (DOLBY NR Switch : OFF)	mV Meter(2) : - 8.24dBm ±1dB

6.3 CD ADJUSTMENT

1) Precautions on Adjustment

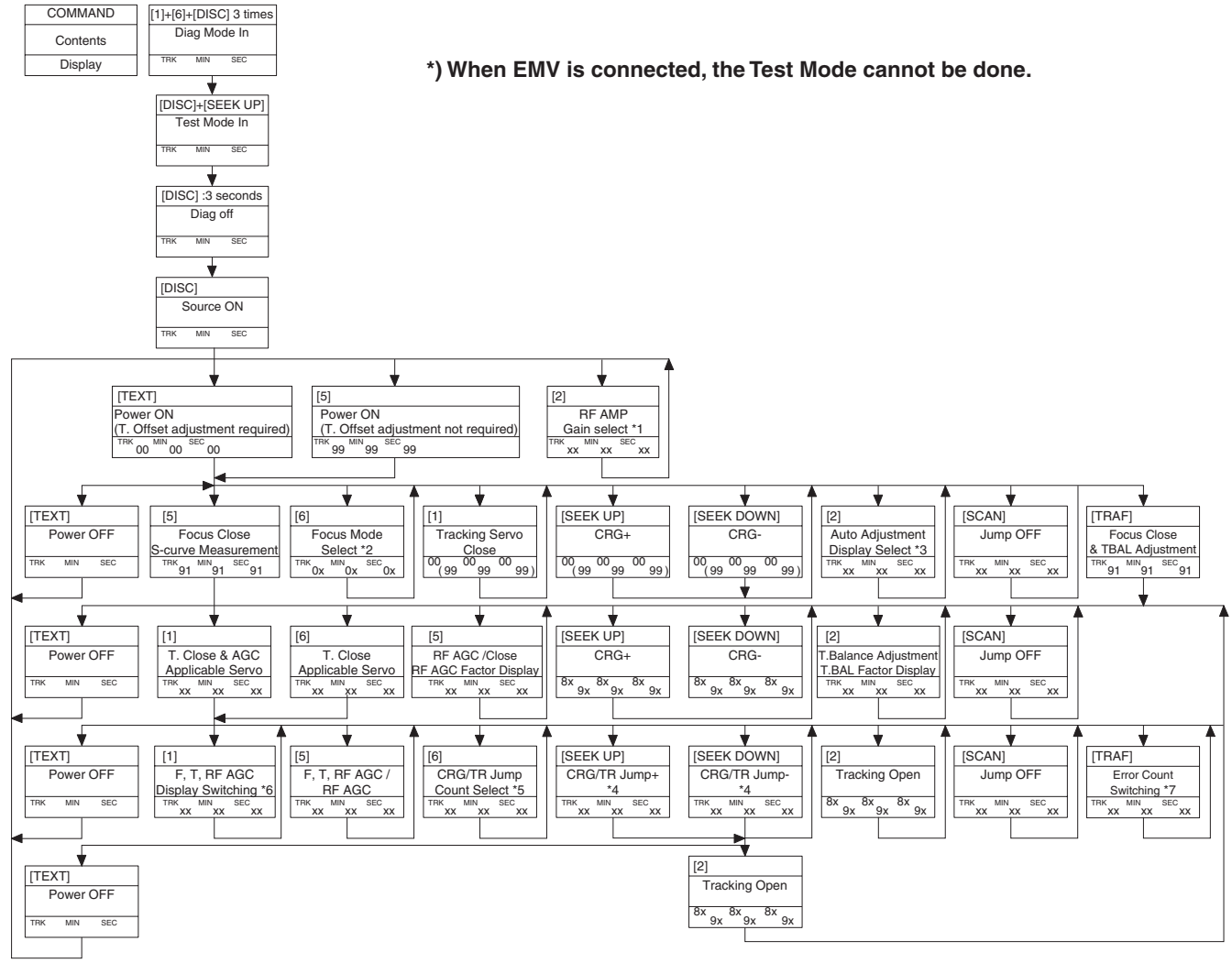
- The unit employs a single voltage (+5V) for the regulator, thus the reference potential of the signal is REFO (approximately 2.5V) rather than GND.
  Inadvertent contact of REFO and GND during adjustment can result not only in disabling normal potential measurement but also in exposing the pickup to strong impacts due to malfunctioning of the servo. Therefore, you are requested to observe the following precautions.
- Make sure that the negative probe of the measuring instrument is not connected to REFO or GND. Special care must be exercised so that the channel 1 negative probe may not be connected to the oscilloscope and the channel 2 negative probe to GND. Since the frame of the measuring instrument is usually at the same potential as the negative probe, the frame of the measuring instrument must be changed to floating status.
  When REFO is inadvertently connected to GND, you must immediately turn off the regulator or power supply.
- The regulator must be turned off before mounting or dismounting filters or wiring materials.
- You should not start adjustment or measurement immediately after the regulator is turned on. It is recommended to run the player for approximately one minute so that it may stabilize.
- When the test mode is turned on, various protective functions from the software become unavailable. Thus, you must make sure that undesirable electric or mechanical shocks are not be given to the system.
- This model employs a photo-transistor for detecting discs at their loading or ejection. Thus, if its outer case is removed during repair work and internal parts are exposed to light of strong intensity, malfunctions including the following can result:
  * The eject button becomes inoperable during play. Pressing the eject button does not eject a disc and play is continued.
  * Loading becomes unavailable.

  If a malfunction is recognized, appropriate remedial actions must be taken. Such actions include changing the light source position, changing the unit position and applying a cover to the photo-transistor.
- When you press the EJECT key to eject a disc, you must not touch any other key until the ejection is complete.
- If you press the UP or DOWN for the focus search in the test mode, you must turn the power off immediately. (Otherwise, the lens will be forced to stick to the top or bottom, potentially resulting in the burning of the actuator.)

2) Description of the Test Mode

- Turning on the Test Mode
- Ending the Test Mode
  Apply the reset (the reset will be applied two minutes after the power is turned from off).
- Operation of TR JUMPs (except 100TR) continues after your finger has left the key. CRG, MOVE and 100TR JUMP are forced to the tracking close mode as soon as the key is released.
- Turning the power on or off resets the JUMP MODE to the Single TR.

● G3 Servo Test Mode Flow Chart



***) When EMV is connected, the Test Mode cannot be done.**

*1) TYP -> -6dB -> -12dB

*2) Focus Close -> S.Curve -> F EQ measurement setting

*3) F.Offset Display -> T.Offset Display -> Original display

*4) 1TR /4TR / 10TR / 32TR / 100TR

*5) Single TR 9X(8X):91(81) -> 4 TR 92(82) -> 10 TR 93(83) -> 32 TR 94(84) -> 100 TR 95(85) -> CRG Move 96(86)

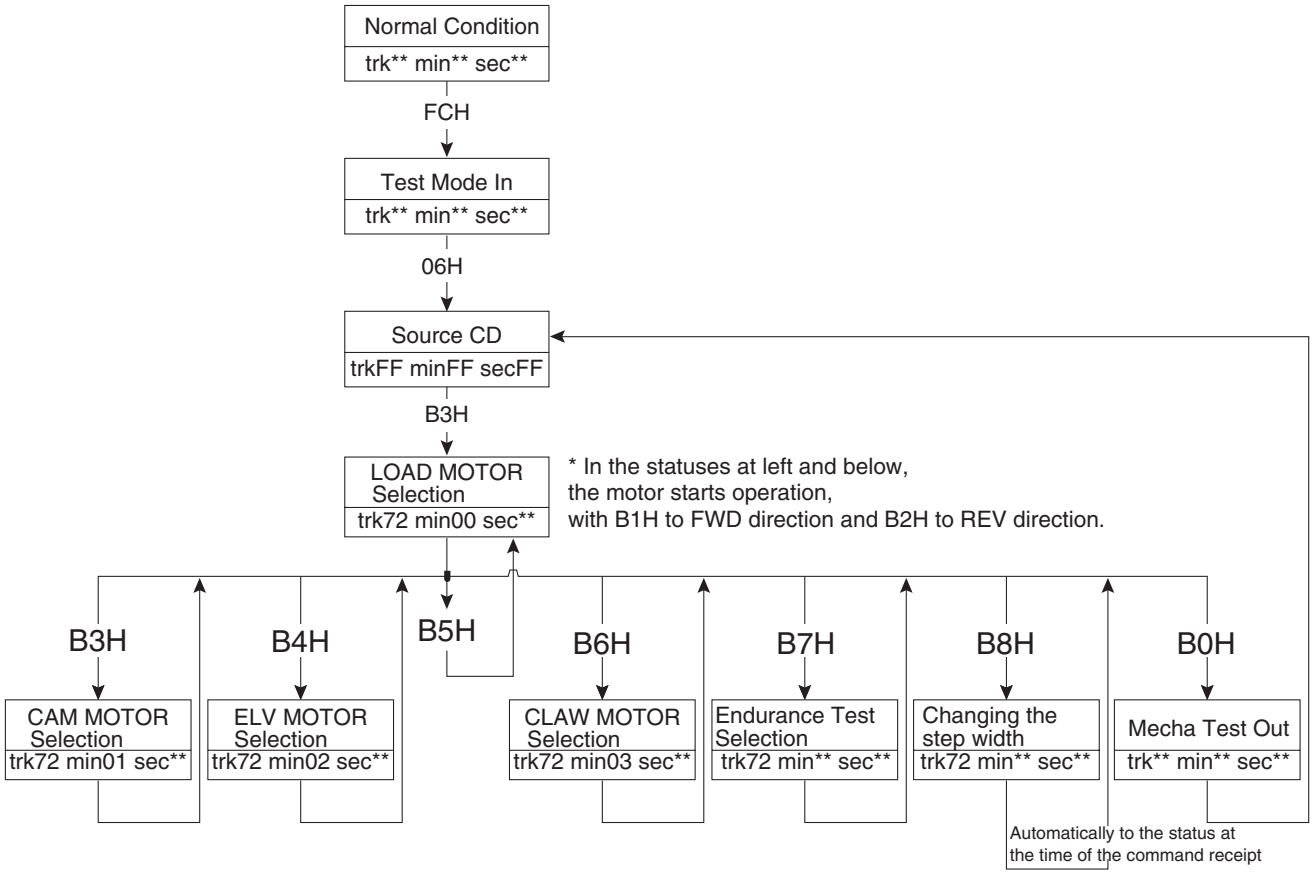
*6) TRK/MIN/SEC -> F.AGC Gain -> T.AGC Gain -> RF AGC Gain

*7) TRK/MIN/SEC -> S.Curve -> C1 error count -> C2 error count
TRK = 0 (Completion of measurement)
TRK >0 (Between measurement)

Key	Operation
	Test Mode
[TEXT]	Power ON/OFF
[SEEK UP]	CRG+ / TR Jump+ (Toward outer perimeter)
[SEEK DOWN]	CRG-/TR Jump- (Toward inner perimeter)
[1]	T. CLS & AGC & Applicable servo / AGC, AGC display switching
[2]	RF gain select / Offset adjustment display / T.Balance adjustment / T. Open
[5]	F. Close, S. Curve /Rough Servo & RF AGC / F, T, RF AGC
[TRAF], [PTY], [MUTE], [AUTO-P]	Error occurrence time Start of Measurement (30s) / Interruption of Measurement (max. 30s) / Display of numbers of C1 & C2 errors (after completion of measurement)
[SCAN], [AST]	Jump OFF
[6]	Focus Mode Select / Tracking Close / CRG, TR Jump Select

After pressing the eject key, do not press any other key than [Eject] key, till the disc is ejected.
TR Jump operations except for 100TR Jump continues even after you release the relevant key.
For CRG Move and 100 TR Jump operations, the system goes to the Tracking-Close status, when you release the relevant key.
Upon turning the power Off/ON, the Jump Mode is reset to Single TR(91), and RF AMP Gain setting is reset to 0dB, while the automatic adjusted values goes back to the initial values.
If you are in the middle of measurement, the measurement is terminated.

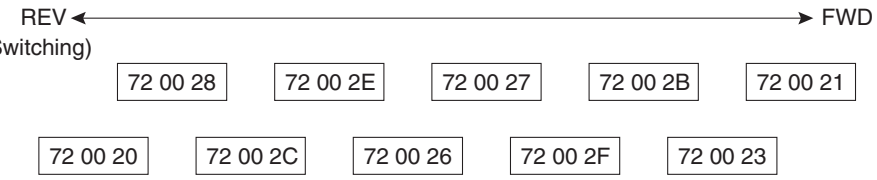
● Mechanism Test Mode Flow chart

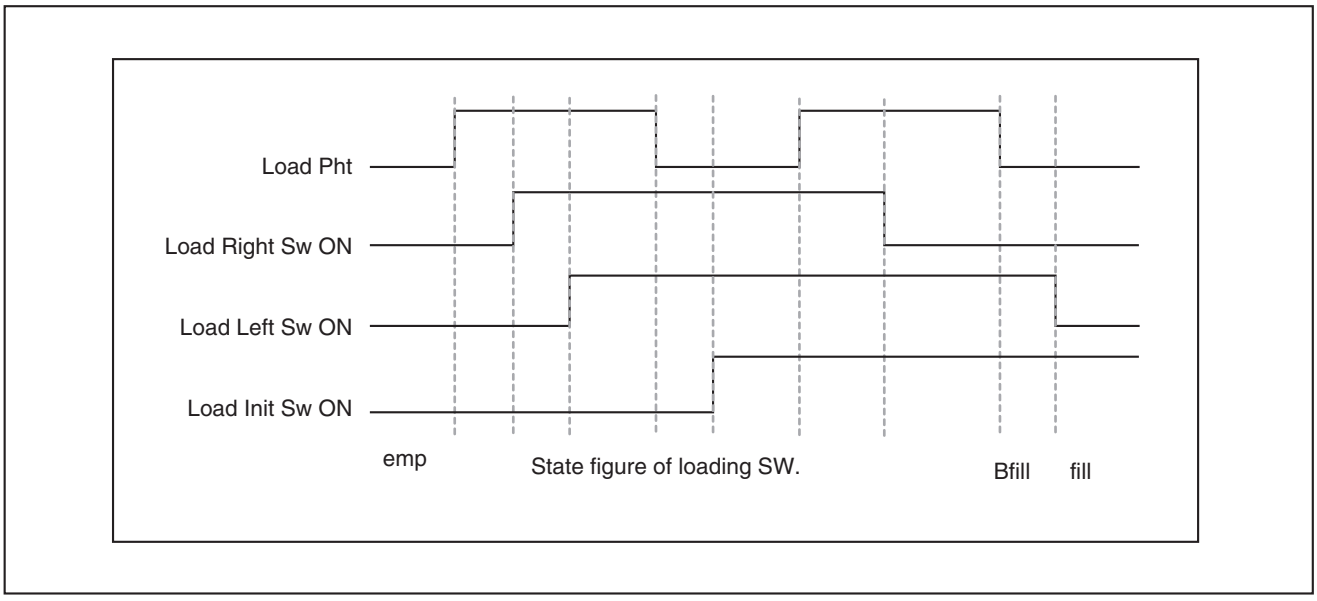


When a load motor is selected:

1. Before starting the motor, send B5H several times to get "72 00 2".
2. After start-up, the motor stops when any of the switches is changed (It also stops when the time runs out).

Display: (Temperature Data and Switching)





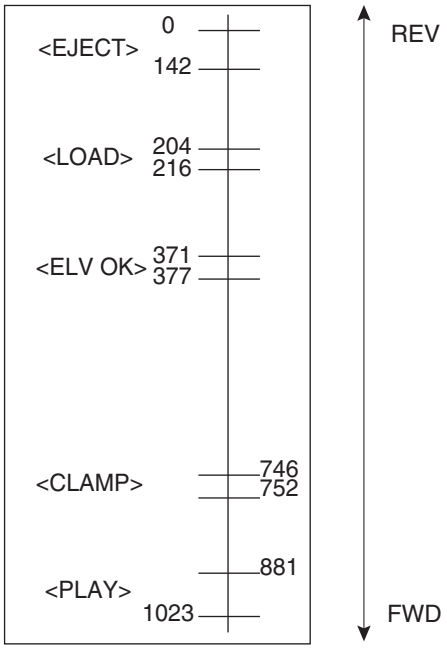
When a cam motor is selected:

1. Before starting the motor, send B3H several times to get "72 01 2*".
2. After start-up, the motor operates till it reaches the status as shown left.

Display:

72 01 20 ⟷ 72 ** **

A value in the left chart comes into the "*" part.



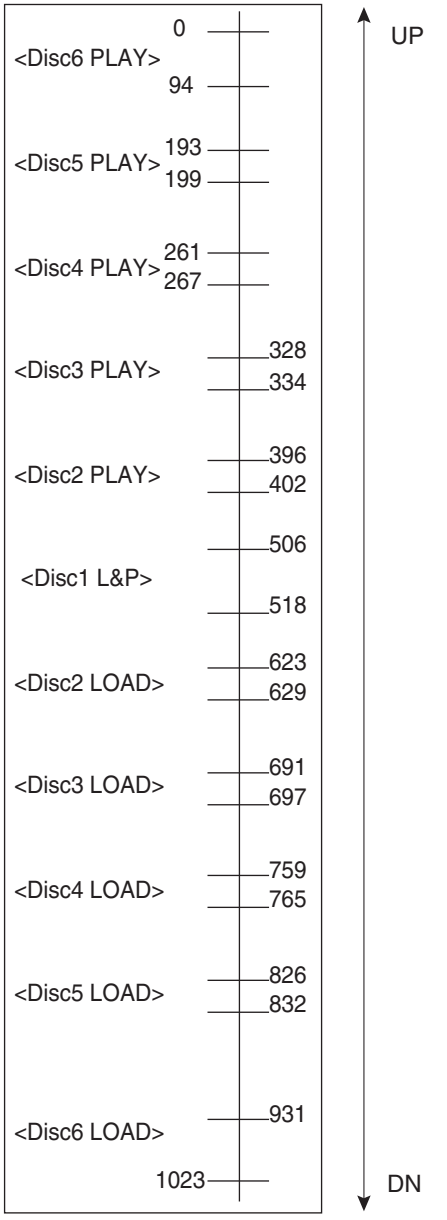
When a elevation motor is selected:

1. Before starting the motor, send B3H several times to get "72 02 2*".
2. After start-up, the motor operates till it reaches the status as shown left.

Display:

72 02 20 ⟷ 72 ** **

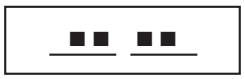
A value in the left chart comes into the "*" part.



6.4 ERROR MODE

■Error codes
In the case where the CD is disabled or stopped by error during operation, the mechanism enters the error mode. The causes of errors are given with numbers.

■Error code displaying method
Error codes for the mechanical module consist of four digit numbers. They are displayed by carrying out a specific operation (command) for the product.



(■ represents a number.)

Error description (upper two digits)

Internal status of the mechanism on occurrence of an error (lower two digits)

The upper two digits indicate the major category and description of an error. The lower two digits indicate the detailed status of internal parts of the mechanism on occurrence of an error.

■ G3 electric system error display
Power system error

Code	Error	Error description, upper (1 and 2 digits)
0xA0	VD power fault	VDSENS error
0xA1	Mechanism reference voltage fault	CAMREF or ELVREF error

■G3 servo-system error display
Servo-system error

Code	Error	Error description, upper (1 and 2 digits)
0x10	Carriage home fault	Carriage does not move to inner radius. Carriage does not move out of the inner radius. Switch fault
0x11	Focus search fault	Correct focus is not obtained.
0x12	Spindle lock or sub-code fault	Spindle is not locked. Sub-code cannot be read.
0x17	Setup fault	AGC protection is disabled. Easy to be out of focus.
0x22	Play is disabled	MP3 file that can be played does not exist.
0x23	(at the time of playing compressed audio)	The audio data is written in a file format
0x30	File format fault (for compressed audio) Search timeout	which is not supported by the mechanism. The target address cannot be reached

■ G3 mechanical error display
Cam error

Code	Error	Error description, upper (1 and 2 digits)
0x50	TRYUP	Forward direction timeout at the time of mechanical operation given in the left column
0x51		Reverse direction timeout at the time of mechanical operation given in the left column
0x52		Overrun/under run at the time of mechanical operation given in the left column
0x53		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x54	TRYDN	Forward direction timeout at the time of mechanical operation given in the left column
0x55		Reverse direction timeout at the time of mechanical operation given in the left column
0x56		Overrun at the time of mechanical operation given in the left column
0x57		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x58	CRGIN	Forward direction timeout at the time of mechanical operation given in the left column
0x59		Reverse direction timeout at the time of mechanical operation given in the left column
0x5a		Overrun/under run at the time of mechanical operation given in the left column
0x5b		Failed to access because of pulse drive at the time of mechanical operation given in the left column.

Code	Error	Error description, upper (1 and 2 digits)
0x5c	CRGOUT	Forward direction timeout at the time of mechanical operation given in the left column
0x5d		Reverse direction timeout at the time of mechanical operation given in the left column
0x5e		Overrun/under run at the time of mechanical operation given in the left column
0x5f		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x60	ELVIN	Forward direction timeout at the time of mechanical operation given in the left column
0x61		Reverse direction timeout at the time of mechanical operation given in the left column
0x62		Overrun at the time of mechanical operation given in the left column
0x63		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x64	ELVOUT	Forward direction timeout at the time of mechanical operation given in the left column
0x65		Reverse direction timeout at the time of mechanical operation given in the left column
0x36 or 0x66		Overrun/under run at the time of mechanical operation given in the left column
0x67		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x68	PETEYIN	Forward direction timeout at the time of mechanical operation given in the left column
0x69		Reverse direction timeout at the time of mechanical operation given in the left column
0x6a		Overrun/under run at the time of mechanical operation given in the left column
0x6b		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x6c	CATCHIN	Forward direction timeout at the time of mechanical operation given in the left column
0x6d		Reverse direction timeout at the time of mechanical operation given in the left column
0x6e		Overrun/under run at the time of mechanical operation given in the left column
0x6f		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x70	DOORROPN	Forward direction timeout at the time of mechanical operation given in the left column
0x71		Reverse direction timeout at the time of mechanical operation given in the left column
0x72		Overrun/under run at the time of mechanical operation given in the left column
0x73		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x74	DOORCLS	Forward direction timeout at the time of mechanical operation given in the left column
0x75		Reverse direction timeout at the time of mechanical operation given in the left column
0x76		Overrun/under run at the time of mechanical operation given in the left column
0x77		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x78	ARMIN	Forward direction timeout at the time of mechanical operation given in the left column
0x79		Reverse direction timeout at the time of mechanical operation given in the left column
0x7a		Overrun/under run at the time of mechanical operation given in the left column
0x7b		Failed to access because of pulse drive at the time of mechanical operation given in the left column.
0x7c	ARMOUT	Forward direction timeout at the time of mechanical operation given in the left column
0x7d		Reverse direction timeout at the time of mechanical operation given in the left column
0x7e		Overrun/under run at the time of mechanical operation given in the left column
0x7f		Failed to access because of pulse drive at the time of mechanical operation given in the left column.

DOORCLS

Code	Error	Error description, upper (1 and 2 digits)
0x80	DOORCLS	Caught disc is detected.
0x81		"H" position of the Load Right switch is detected.
0x82		Load switch chatter cannot be eliminated.

CAMRST error

Code	Error	Error description, upper (1 and 2 digits)
0x91	CAMRST	Error stop position is reached at the time of CAMRST.
0x92		Claw switch chatter cannot be eliminated.
0x93		Claw does not close during CAMRST process.

Claw error

Code	Error	Error description, upper (1 and 2 digits)
0x9a	DSKFREE	Claw does not close during DSKFREE process.
0x9b	DSKLOCK	Claw does not open during DSKLOCK process.
0x9c	CLWCLSE	Claw does not close during CLWCLSE process.
0x9d	CLWOPEN	Claw does not open during CLWOPEN process.

ELV error

Code	Error	Error description, upper (1 and 2 digits)
0xb0	"DISCSEL (Load to Load)"	Timeout occurs before the brake position of the elevator is reached (ascending) at the time of mechanical operation given in the left column.
0xb1		Timeout occurs before the brake position of the elevator is reached (descending) at the time of mechanical operation given in the left column.
0xb2		Overrun/under run error of the elevator at the time of mechanical operation given in the left column.
0xb3		100-time attempts of the elevator pulse driving have failed at the time of mechanical operation given in the left column.
0xb4	"DISCSEL (Load to Play)"	Timeout occurs before the brake position of the elevator is reached (ascending) at the time of mechanical operation given in the left column.
0xb5		Timeout occurs before the brake position of the elevator is reached (descending) at the time of mechanical operation given in the left column.
0xb6		Overrun/under run error of the elevator at the time of mechanical operation given in the left column.
0xb7		100-time attempts of the elevator pulse driving have failed at the time of mechanical operation given in the left column.
0xb8	"DISCSEL (Play to Load)"	Timeout occurs before the brake position of the elevator is reached (ascending) at the time of mechanical operation given in the left column.
0xb9		Timeout occurs before the brake position of the elevator is reached (descending) at the time of mechanical operation given in the left column.
0xba		Overrun/under run error of the elevator at the time of mechanical operation given in the left column.
0xbb		100-time attempts of the elevator pulse driving have failed at the time of mechanical operation given in the left column.
0xbc	"DISCSEL (Play to Play)"	Timeout occurs before the brake position of the elevator is reached (ascending) at the time of mechanical operation given in the left column.
0xbd		Timeout occurs before the brake position of the elevator is reached (descending) at the time of mechanical operation given in the left column.
0xbe		Overrun/under run error of the elevator at the time of mechanical operation given in the left column.
0xbf		100-time attempts of the elevator pulse driving have failed at the time of mechanical operation given in the left column.

*0xb0 to 0xb3 only for the self test under test mode.

Insertion/ejection error

Code	Error	Error description, upper (1 and 2 digits)
0xe0	CAMRST	Door is opened at the time of CAMRST (door opening/closing error).
0xe1	WTLOAD	"Load error (Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"
0xe2	EJCTION	"Eject error(Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"
0xe3	SEJPCK	"SEJPCK error (Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"
0xe4	HLFLOAD	"HLFLOAD error (Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"
0xe5	DINSRDY	"DINSRDY error (Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"
0xe7	RELOAD	"RELOAD error (Forced eject -> DOORCLS -> DOOROPN, repeated by five times)"

Wait for disc draw-out

Code	Error	Error description, upper (1 and 2 digits)
0xc0	CAMRST	CAMRST -> Forced eject -> Wait for disc draw-out
0xc1	WTLOAD	WTLOAD -> Forced eject -> Wait for disc draw-out
0xc2	EJCTON	EJCTON -> Forced eject -> Wait for disc draw-out
0xc3	SEJPCK	SEJPCK -> Forced eject -> Wait for disc draw-out
0xc4	HLFLOAD	HLFLOAD -> Forced eject -> Wait for disc draw-out
0xc5	DINSRDY	DINSRDY -> Forced eject -> Wait for disc draw-out
0xc6	DOORCLS	DOORCLS -> DOOROPN -> Forced eject -> Wait for disc draw-out
0xc7	RELOAD	RELOAD -> Forced eject -> Wait for disc draw-out

Other special errors

Code	Error	Error description, upper (1 and 2 digits)
0xf0	SELFTST	H/L of the Load switch cannot be detected during a self test.
0xf2	EJCTON	Disc cannot be ejected. The mechanism stops with the disc sucked.

■G3 new test mode error display

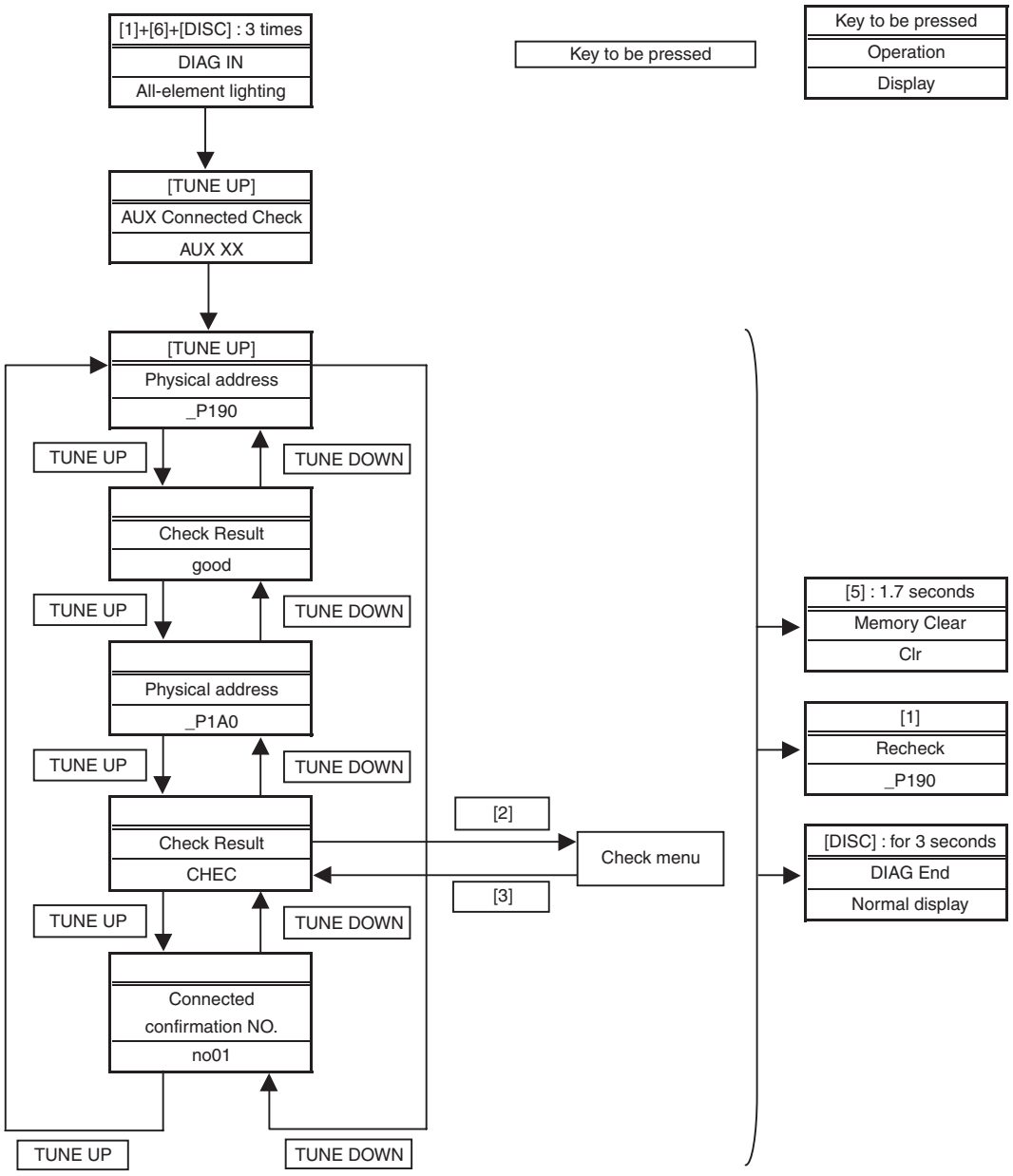
New test mode error

Code	Error	Error description, upper (1 and 2 digits)
0x40	Focus search fault	RFOK=LOW continued for 100 msec.
0x41	Spindle lock fault	LOCK=LOW continued for 100 msec.
0x42	Sub-code fault	Sub-code cannot be read for 500 msec.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

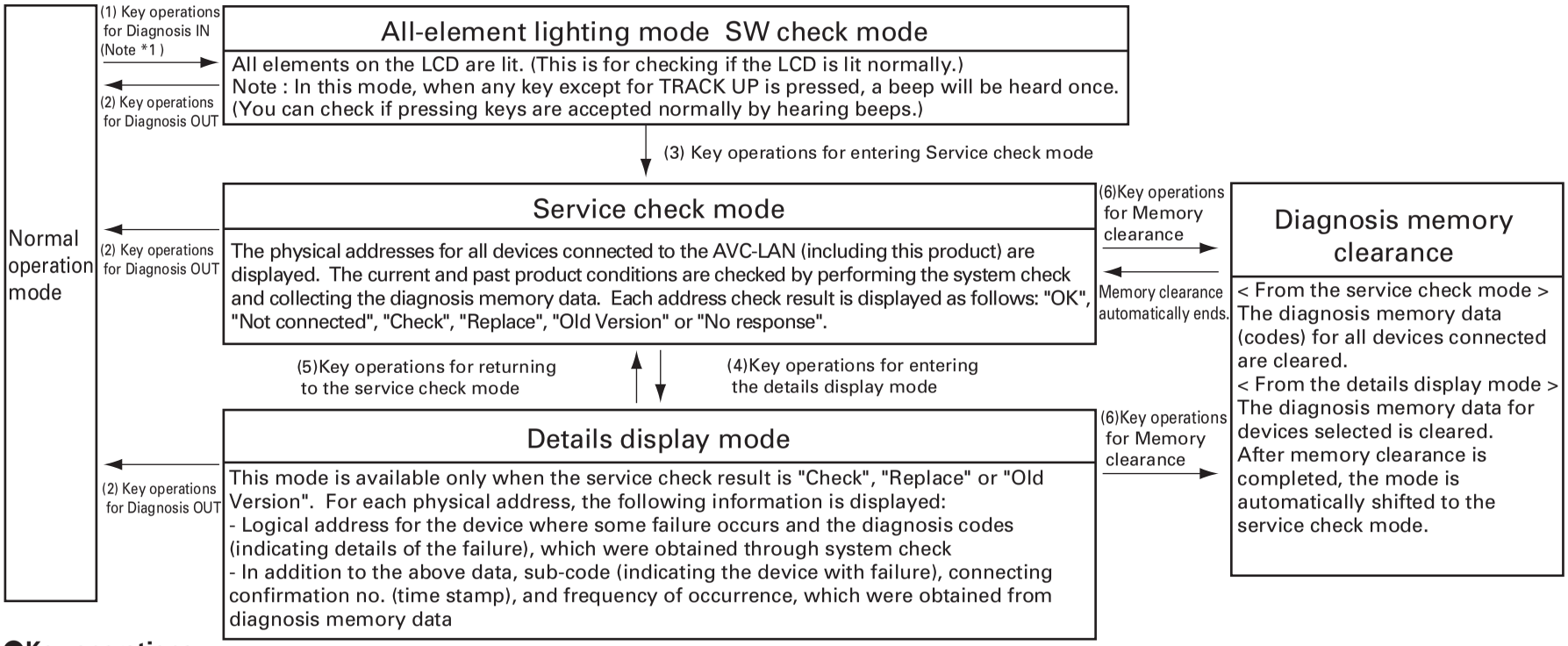
7.1.1 AVC-LAN DIAGNOSIS MODE



Key operations

(1) Diagnosis IN With three times of beep sound, the mode change operation completes.	While pressing the CH1 and CH6 buttons simultaneously, press the DISC button three times.
(2) Diagnosis OUT	Keep the DISC button pressed for 1.7 seconds or more and turn the ACC switch OFF.
(3) Entering the Service check mode. With a beep sound, the mode change completes.	Press the TUNE UP button.
(4) Entering the Derails display mode.	Press the CH2 button.
(5) Returning to the service check mode.	Press the CH3 button.
(6)Clearing the Memory data	Keep the CH5 button pressed for 1.7 seconds or more.
Change the display (forward)	Press the TUNE-UP button.
Change the display (backward)	Press the TUNE-DOWN button.

●Operations and functions


Normal operation mode
(1) Key operations for Diagnosis IN (Note *1)
(2) Key operations for Diagnosis OUT
All-element lighting mode SW check mode
All elements on the LCD are lit. (This is for checking if the LCD is lit normally.)
Note : In this mode, when any key except for TRACK UP is pressed, a beep will be heard once. (You can check if pressing keys are accepted normally by hearing beeps.)
(3) Key operations for entering Service check mode
Service check mode
The physical addresses for all devices connected to the AVC-LAN (including this product) are displayed. The current and past product conditions are checked by performing the system check and collecting the diagnosis memory data. Each address check result is displayed as follows: "OK", "Not connected", "Check", "Replace", "Old Version" or "No response".
(6)Key operations for Memory clearance
Memory clearance automatically ends.
Diagnosis memory clearance
< From the service check mode >
The diagnosis memory data (codes) for all devices connected are cleared.
< From the details display mode >
The diagnosis memory data for devices selected is cleared.
After memory clearance is completed, the mode is automatically shifted to the service check mode.
(5)Key operations for returning to the service check mode
(4)Key operations for entering the details display mode
Details display mode
This mode is available only when the service check result is "Check", "Replace" or "Old Version". For each physical address, the following information is displayed:
- Logical address for the device where some failure occurs and the diagnosis codes (indicating details of the failure), which were obtained through system check
- In addition to the above data, sub-code (indicating the device with failure), connecting confirmation no. (time stamp), and frequency of occurrence, which were obtained from diagnosis memory data
(6)Key operations for Memory clearance

●Key operations

(1) Diagnosis IN With three times of beep sound, the mode change operation completes.	While pressing the CH1 and CH6 buttons simultaneously, press the DISC button three times.
(2) Diagnosis OUT	Keep the DISC button pressed for 1.7 seconds or more and turn the ACC switch OFF.
(3) Entering the Service check mode. With a beep sound, the mode change completes.	Press the TRACK UP button.
(4) Entering the Details display mode.	Press the CH2 button.
(5) Returning to the service check mode.	Press the CH3 button.
(6)Clearing the Memory data	Keep the CH5 button pressed for 1.7 seconds or more.
Change the display (forward)	Press the TRACK UP button.
Change the display (backward)	Press the TRACK DOWN button.

Note *1: To enter the diagnosis IN mode, use the buttons on the head unit.

●Diagnosis mode display

Service check mode

After system check completes, the check results for the devices connected to the AVC-LAN are displayed in turn in order of physical address number as follows:

◆"Physical address"
...The smallest physical address number is displayed first, whose check result will follow it.

Ex. P190
- P: Physical address number (radio cassette)
- 90: The physical address is displayed.

◆"Check result"
...The check result is displayed.

Ex.
- good Normal (OK)
- ECHn Replace
- CHEC Check
- OLd Old Version

(Replace / Check / Old Version → Details display mode)

◆"Physical address"
...The next physical address number is displayed.

◆"Connecting confirmation no. (current)"
...The AVC-LAN time stamp is displayed.

Ex. no01
- no: The connecting confirmation number is displayed.
- 01: The current connecting confirmation number (expressed in the hexadecimal number system by using 00 to FF)

The number increases by one each time one minute passes. When 256 minutes pass, the indication returns to 00.

Details display mode (only in case of "Replace", "Check", or "Old Version")

This mode is available only when the service check result is "Replace", "Check" or "Old Version".
To select this mode, press the CH2 key.

◆"Physical address (for selected devices)"
The physical address number is displayed, whose check result details will follow it.

Ex. _ P360
- P360: Physical address number (CD-CH)

◆ "Diagnosis data source"
The detailed items depend on the data source.

Ex. SyS The data was obtained from system check.

◆ "Logical address"
The logical address number for the device with failure is displayed.

Ex. 1L_63
- 1L: The logical address is displayed.
- 63: Logical address number (CD-CH)

Serial number

◆ "Diagnosis code"
The diagnosis code indicates what problem occurs.

Ex. 1d_45
- 1d: The diagnosis code is displayed.
- 45: Diagnosis code (abnormal EJECT)

If there are two or more diagnosis codes, the diagnosis data display will continue.

Ex. COdE The data was obtained from diagnosis memory data.

◆ "Logical address"...The same as that for the SyS data
◆ "Diagnosis code"...The same as that for the SyS data
◆ "Sub code"...This code indicates the device with failure.

Ex. 1P_190
- 1P: The sub code is displayed.
- 90: The sub code is displayed.

◆ "Connecting confirmation number (when some failure occurs)"... AVC-LAN time stamp

Ex. no01
- no: The connecting confirmation number (expressed in the hexadecimal number system by using 00 to FF)
- 01: The connecting confirmation number is displayed.

◆ "Frequency of occurrence"
...The frequency of failures occurred

Ex. 1c_15
- 1c: The frequency of occurrence expressed in the decimal number system.
- 15: The frequency of occurrence is displayed.

Physical address allocation

① 1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	M.DISP computer	New EMV	New device with AV	New MM ECU	device with AV				Audio ECU (RSA-L)	Audio H/U	DVD-P	Rear TV	Rear Control SW	Multi-CD decoder	CD-CH commander	AMP controlled radio tuner
1																XM radio tuner
2													Europe GW ECU			SIRIUS radio tuner
4					G-BOOK							1-DIN Navigation	Consolidated inside panel	Simple LCD	Consolidated SW	RSA-M
6													Gateway ECU			RSE-M
8			New 1-DIN TV		Europe navigation DISP.M/U		Rear TV with movie mode	Navigation with controls				DISPLAY with SW	FM multiplex DISPLAY	Fr controlled SW	MD-CH commander	
C							RES-L1	MONET ECU			Camera with controls		Steering SW	Navigation remote controller	Body computer	
D							RES-L2	Overseas TEL ECU								
E								Vehicle Information ECU								
1,3,5,7, 9-B,D,F																

③ ↓ ② →

Display
P①②③
Ex.P190
Physical address

① 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Navigation computer	ATIS	VICS	TV tuner	H/W CD-CH	H/W DVD-CH	TEL information ECU		Camera controller							
8				DTV tuner		DVD deck										
1-7, 9-F																

① 3	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Radio		Cassette	Radio cassette with no CH controller	CD-P		1DIN CD-CH		MD-P		MD-CH		DAT		DCC	
8																TEL ECU
1-7, 9-F																

① 4	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Equalizer				DSP				H/W AMP							
1-F																

① 5	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	GPS receiver	ATIS decoder	FM multiplex decoder	ETC	CD-CH		MD-CH		CD-ROM -CH		MD-ROM -CH		TEL information			
8			Radio wave beacon										May Day			
C			Optical beacon													
1-7,9-8,D-F																

① 6	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	A/C computer								Body computer							
1-F																

FX-MG9067ZT/UC

Diagnosis code table

Logical address name	Logical address	Diagnosis code	Diagnosis details
Communi -cation control	01H	00	No diagnosis
		01	Abnormal reset
		10	Abnormal +B
		11	Abnormal ACC
		12	Abnormal MUTE
		13	Fuse broken
		20	Microcomputer - abnormal
		21	ROM - abnormal
		22	RAM - abnormal
		23	Bus - abnormal
		24	F-ROM - abnormal
		25	V-RAM - abnormal
		26	Gate allay abnormal
		27	Paint controller abnormal
		28	Backup memory abnormal
		29	Voice output controller abnormal
		2A	Internal power supply abnormal
		30	Sync signal abnormal (input)
		31	Sync signal abnormal (output)
		D0	ECU not connected
		D1	Transmission abnormal
		D2	Connecting confirmation: abnormal
		D4	Connecting confirmation: no response
		D5	Registered device data missing (History of registered devices)
		D6	Master unavailable
		D7	Connecting confirmation: abnormal
		D8	Connecting confirmation: no response
		D9	Last mode abnormal
		DA	Command/order: no response
		DB	Mode status abnormal
		DC	Transmission fault
		DD	Master reset
		DE	Slave reset
		DF	Master abnormal
		E0	Registration completion acknowledgement error
		E1	Voice processor ON abnormal
		E2	ON/OFF command or parameter abnormal
		E3	Registration command transmission
		E4	Multiple frames intermit.
		FF	Diagnosis - no response

Logical address name	Logical address	Diagnosis code	Diagnosis details
Radio	60H	10	AM tuner PLL unlocked
		11	FM tuner PLL unlocked
		40	No antenna connected
		41	Antenna power supply abnormal
		42	Tuner power supply abnormal
		43	AM tuner abnormal
		44	FM tuner abnormal
		45	SW tuner abnormal
TV tuner	40H	10	TV tuner PLL unlocked
		11	FRONTEND abnormal
		40	TV divergence shifting error
		41	TV – no reception
		42	VNR screen error
		43	No antenna connected
		44	Antenna power supply abnormal
		45	SEL +B current – small
		46	SEL +B current – large
Cassette tape	61H	10	Belt broken
		40	Mechanical failure or cassette broken
		41	EJECT failure
		42	TAPE jamming
		43	Dirty head
		44	Mech power supply abnormal
CD CD-P CD-CH	43H 62H 63H	10	CD Mech abnormal
		11	CD loading/unloading abnormal
		12	CD lead-in abnormal
		40	No disc loaded
		41	Incorrect disc
		42	Disc unreadable
		43	CD-ROM abnormal
		44	CD abnormal
		45	EJECT abnormal
		46	Scratches or non-recorded side
		47	CD high temperature detected
		48	Excessive current detected
		50	Tray IN/OUT abnormal
		51	Elevator abnormal
		52	Clamp abnormal
MD MD-CH	64H 65H	10	MD mech abnormal
		11	MD IN/OUT abnormal
		12	MD lead-in abnormal
		40	No disc loaded
		41	Incorrect disc
		42	Disc unreadable
		43	MD-ROM abnormal
		44	MD abnormal
		45	EJECT error
		46	Scratches or non-recorded side
		47	MD high temperature detected
		48	Excessive current detected
		50	Tray IN/OUT abnormal
		51	Elevator abnormal
		52	Clamp abnormal

Logical address name	Logical address	Diagnosis code	Diagnosis details
Navigation /GPS	58H 80H	10	Gyroscope abnormal
		11	GPS receiver abnormal
		12	RTC abnormal
		13	SS section abnormal
		14	No Time updating
		15	TCXO abnormal
		16	PLL lock abnormal
		40	GPS antenna abnormal
		41	GPS antenna power supply abnormal
		42	Map disc reading abnormal
		43	SPD signal abnormal
		44	Player abnormal
		45	High temperature abnormal
FM multiplex (VICS), radio wave beacon, beacon, optical beacon, FM multiplex (data), and FM multiplex tuner	5AH 84H 5BH 83H 82H 9AH	41	Antenna power supply abnormal
		45	Radio wave beacon - no antenna connected
		46	Optical beacon - no antenna connected
		47	No FM antenna connected
		4A	FM receiver abnormal
		4B	Radio wave beacon abnormal
		4C	Optical beacon abnormal
Voice control	85H	40	Voice-control activation SW abnormal
		41	Voice-control Microphone abnormal
Extended communi -cation	02H	40	Multi-CD-CH (optical cable) abnormal
		41	Multi-CD-CH (optical cable) not connected
		42	Multi-CD-CH (CarNet) abnormal
		43	Multi-CD-CH (CarNet) not connected
		50	HIT64 communication not connected
		51	HIT64 communication abnormal
		52	HIT64 BRQ disconnection
		53	HIT64 BRQ short-circuit
		54	HIT64 disconnection
		55	CarNet communication not connected
		56	CarNet communication abnormal
		57	CarNet periodical communication abnormal
Information display/front monitors	32H 34H	10	Video circuit abnormal
		11	Back light abnormal (with no current)
		12	Back light abnormal (with excessive current)
		13	Panel open/close mechanical operation abnormal
		40	Front seat monitor abnormal
		41	Heater abnormal
SW, Audio SW, SW shifting, Command SW	21H 23H 24H 25H	10	Panel SW abnormal
		11	Touch SW failure
XM tuner	C0H	11	PLL Unlock
		12	CODEC Communication Error
		13	SSDEC Communication Error
		14	SSDEC No Response Error
		15	NVM Error
		16	CAP Error
		40	ANTENNA No Contact
		41	ANTENNA Short

Diagnosis code table

Logical address name	Logical address	Diagnosis code	Diagnosis details
XM	C0H	11	PLL unlocked
		12	CDEC communication error
		13	SSDEC communication error
		14	SSDEC no response
		15	NVM error
		16	CAP error
		40	No antenna connected
		41	Antenna short-circuited
DVD-CH	45H	42	Disc unreadable
		44	DVD abnormal
		45	EJECT abnormal
		46	Scratches or non-recorded side
		47	DVD high temperature detected
		48	Excessive current detected
		50	Tray IN/OUT abnormal
		51	Elevator abnormal

7.1.2 DISASSEMBLY

● Removing the Case (not shown)

1. Remove the four screws and then remove the Case.

● Removing the Grille Assy (Fig.1)

1 Remove the four screws and then remove the Grille Assy.

NOTE Press LOAD, and insert a disc while Ready indicator lights green.
6 DISC CD CHANGER
LOGIC CONTROL DECK
There is a claw.
Grille Assy
There is a claw.

Fig.1

● Removing the Frame Unit (Fig.2)

1 Remove the five screws and then remove the Frame Unit.

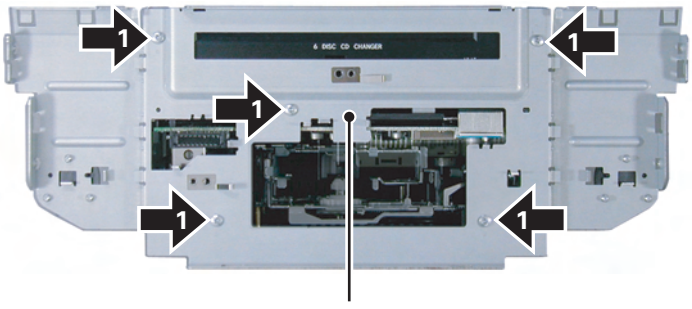


Fig.2

● Removing the CD Mechanism Module (Fig.3)

1 Remove the four screws.

Disconnect the connector and then remove the CD Mechanism Module.

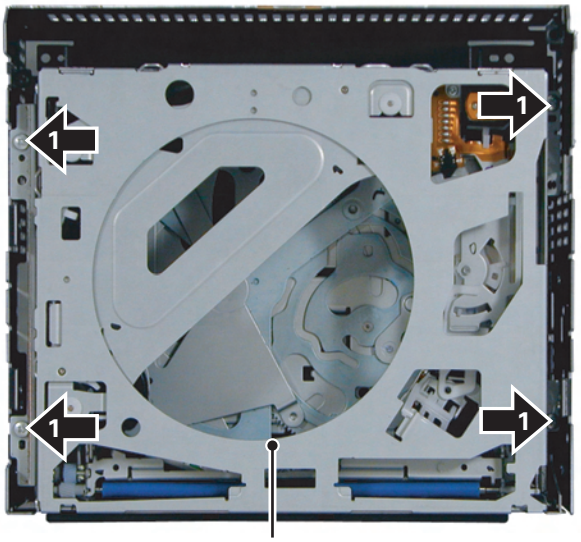


Fig.3

● **Removing the Holder (Fig.4)**

1 Remove the six screws and then remove the Holder.

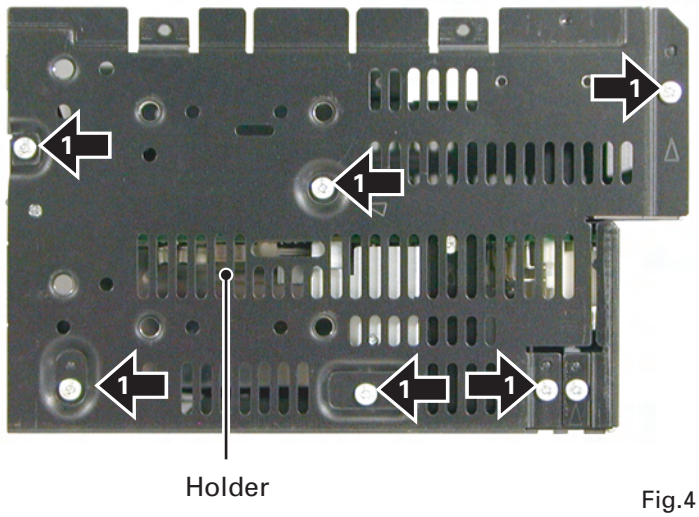


Fig.4

● **Removing the Holder (Fig.5)**

1 Remove the two screws and then remove the Holder.

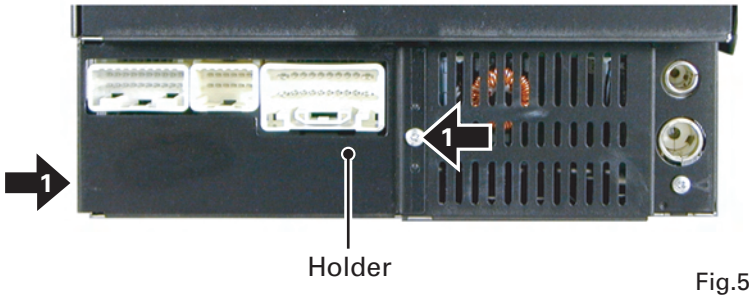


Fig.5

● **Removing the Chassis Unit (Fig.6)**

1 Remove the five screws and then remove the Chassis Unit.

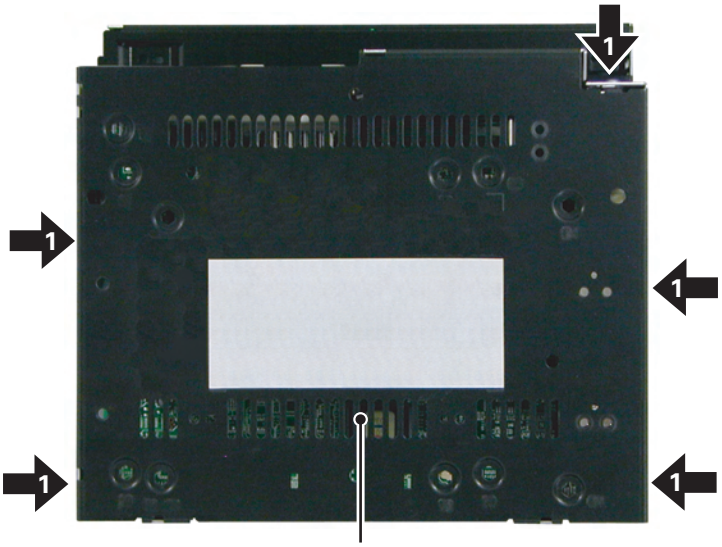


Fig.6

● Removing the Cassette Mechanism Module (Fig.7)

1 Remove the four screws and then remove the Cassette Mechanism Module.

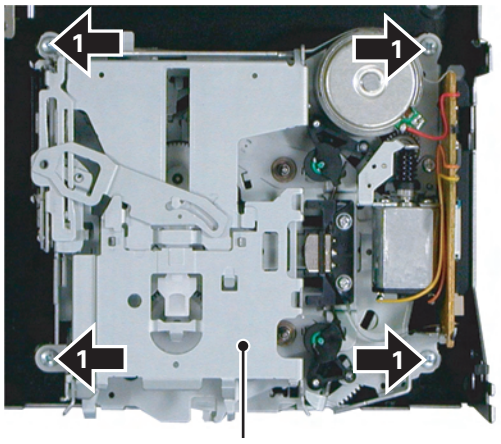


Fig.7

● Removing the Main Unit (Fig.8)

1 Straighten the tabs at three locations indicated.

2 Remove the two screws and then remove the Main Unit.

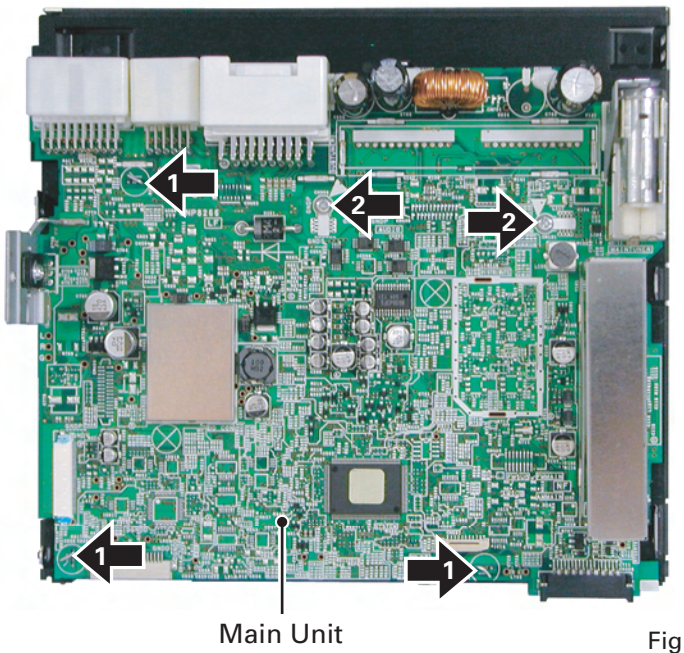
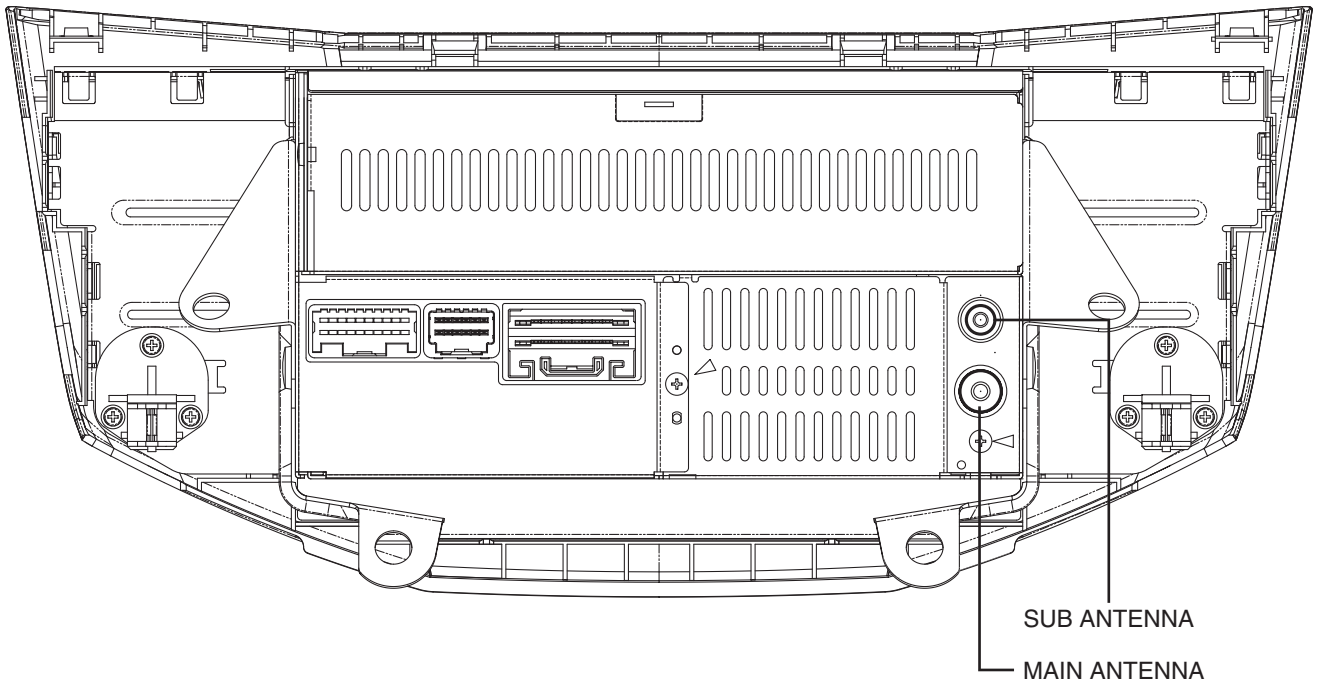
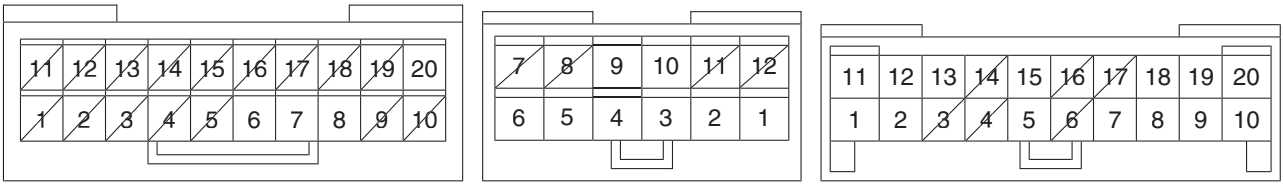


Fig.8

* Please refer to Mechanism Manual (CRT3467) for removing module part of CD mechanism. Three GGF1538 are necessary to build up CD mechanism.

7.1.3 CONNECTOR FUNCTION DESCRIPTION

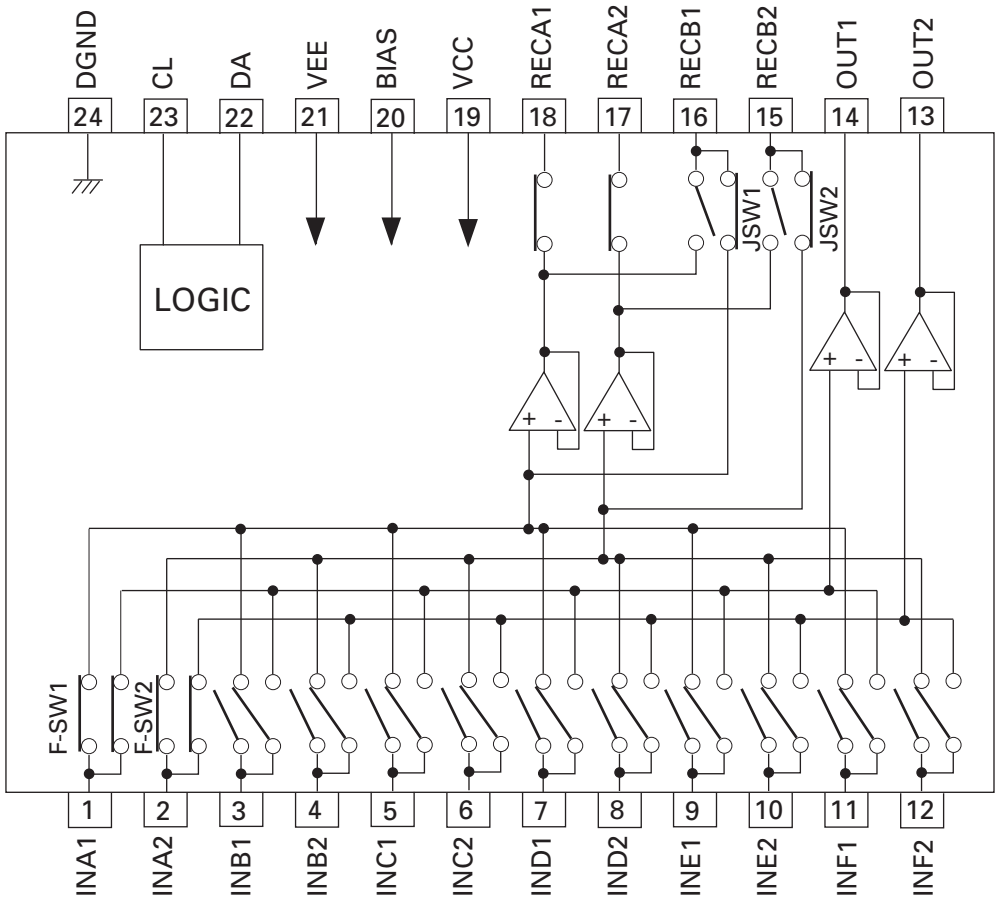




~~1 : NC~~	~~11 : NC~~	1 : MUTE	~~7 : GND~~	1 : B	11 : ACC
~~2 : NC~~	~~12 : NC~~	2 : CDL-	~~8 : NC~~	2 : ILL+	12 : ILL-
~~3 : MTOR~~	~~13 : SLD1~~	3 : CDL+	9 : TXM+	~~3 : AMP~~	13 : ANT
~~4 : NC~~	~~14 : RSLD~~	4 : CDR-	10 : TXM-	~~4 : ANTA~~	~~14 : ANTB~~
~~5 : NC~~	~~15 : R-R+/ARI~~	5 : CDR+	~~11 : ACC~~	5 : ATX+	15 : ATX-
6 : SWG	~~16 : R-R-/ASGN~~	6 : CSLD	~~12 : +B~~	~~6 : NC~~	~~16 : NC~~
7 : SW1	~~17 : R-L+/ALI~~			7 : MUTE	~~17 : SLD2~~
8 : SW2	~~18 : NC~~			8 : R+	18 : R-
~~9 : TX+~~	~~19 : RMUT/AUXI~~			9 : L+	19 : L-
~~10 : TX-~~	20 : ADIM			10 : SLD	20 : GND

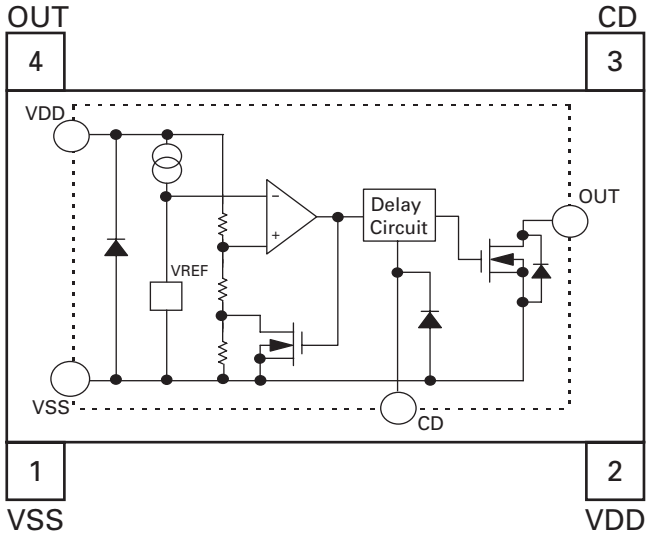
7.2 PARTS
7.2.1 IC

* BD3842FS



IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

* S-80940CNNB-G9A

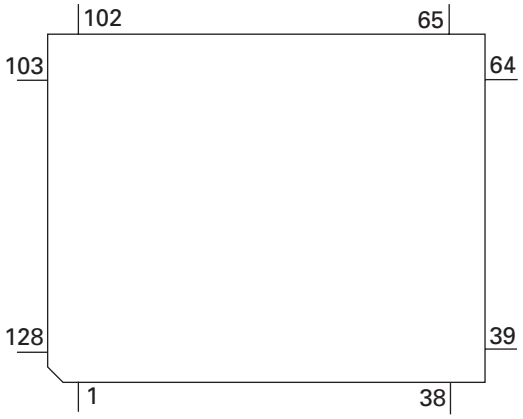


● Pin Functions(PEG186A)

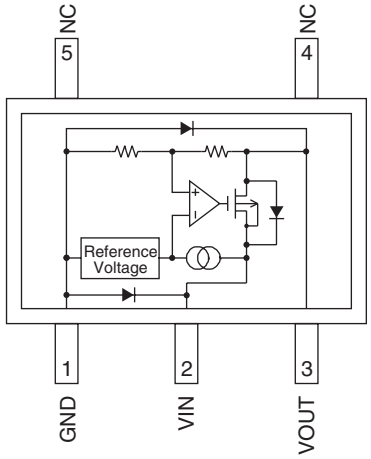
Pin No.	Pin Name	I/O	Function and Operation
1	VREF	I	A/D reference voltage input
2	AVCC		AVCC
3	PDI	I	PLL : Data input
4	PDO	O	PLL : Data output
5	$\overline{\text{PCK}}$	O	PLL : Data clock output
6	$\overline{\text{PCE2}}$	O	EEPROM : Chip enable output
7	PCE1	O	PLL : Chip enable output
8	LDTO	O	LCD Driver : Data output
9	LDTI	I	LCD Driver : Data input
10	LCK	O	LCD Driver : Clock output
11	ENC1P	I	Rotaly Encoder 1+ : input
12	ENC1M	I	Rotaly Encoder 1- : input
13	BYTE		GND
14	CNVSS		GND
15	ENC2P	I	Rotaly Encoder 2+ : input
16	ENC2M	I	Rotaly Encoder 2- : input
17	$\overline{\text{RESET}}$	I	Reset input
18	XOUT	O	Crystal oscillating element connection output
19	VSS		GND
20	XIN	I	Crystal oscillating element connection input
21	VCC		Power supply
22	$\overline{\text{NMI}}$		VDD connection
23-25	NC		Not used
26	RX2	I	AVC-LAN : Data input
27	IPPW	O	AVC-LAN : Power supply control output
28	$\overline{\text{LRST}}$	O	LCD Driver : Reset output
29	PWRBL	O	Backlight control output
30	LCE	O	LCD Driver : Chip enable output
31	PWMILL	O	Illumination control output
32	$\overline{\text{BSRQ}}$	I	P-BUS : Request input
33	$\overline{\text{BRST}}$	O	P-BUS : Reset output
34	RX1	I	AVC-LAN : Data input
35	TX	O	AVC-LAN : Data output
36	BSO	O	P-BUS : Data output
37	VCC		Power supply
38	BSI	I	P-BUS : Data input
39	VSS		GND
40	BCK	O	P-BUS : Data clock output
41	$\overline{\text{BRXEN}}$	I/O	P-BUS : Reception enable input/output
42	UTX	O	UART : Data output
43	URX	I	UART : Data input
44	PLAY	O	MS gain select output
45	IRQPW	I	UART : Request signal input
46	$\overline{\text{MTL}}$	I	Cassette mechanism tape select input
47	NC		Not used
48	NR	O	Dolby NR ON/OFF select output
49	TEST	I	Test mode program input
50-61	NC		Not used
62	MAINFIX	I	Antenna control input
63	PINFO	I	Panel type detect input
64	CSLOAD	I	Tape loading detect input
65	ANTA	O	ANT A control output
66	ANTB	O	ANT B control output
67	AMPW	O	TUNER : AM power supply control output
68	FMPW	O	TUNER : FM power supply control output
69	ACCON	O	BSENS power supply control output
70-72	NC		Not used
73	SC2	O	Cassette mechanism sub motor output
74	DOT		Connect to GND
75	NC		Not used
76	FRMUTE	O	SPOUT mute output
77	REMUTE	O	RSEOUT mute output

Pin No.	Pin Name	I/O	Function and Operation
78	RSEMUTE	O	RSE unit mute output
79	LANMUTE	O	AVC-LAN mute output
80	ADIM	I	ADIM data input
81	SYSPW	O	System power supply control output
82	SWVDD	O	SWVDD control output
83	WC	I/O	Test mode input / Tuner write control output
84	NC		Not used
85	VCC		Power supply
86	DDCONF2	O	DD control frequency select output
87	VSS		GND
88	SELDATA	O	Audio selector control output
89	SELCK	O	Audio selector clock output
90-94	NC		Not used
95	$\overline{\text{ISEN}}$	I	Illumination sense input
96	NC		Not used
97	$\overline{\text{ASEN}}$	I	ACC power sense input
98	$\overline{\text{BSEN}}$	I	Back up power sense input
99-101	NC		Not used
102	MOTANT	I	Motor antenna detect input
103	STBY2	O	Cassette mechanism driver stand-by output
104	MS	I	Music sense input
105	$\overline{\text{FR}}$	O	Cassette mechanism head forward/reverse select output
106	CM	O	Cassette mechanism capstan motor control output
107-109	NC		Not used
110	POS	I	Cassette mechanism position sense input
111	ES	I	Cassette mechanism end sense input
112-119	NC		Not used
120	AUXIN	I	Mini Jack sense input
121	STSW1	I	Steering switch 1 input
122	STSW2	I	Steering switch 2 input
123	ILL-	I	Illumination minus input
124	AREA	I	Area distinguish input
125	2NDL/R	I	Model type detect input
126	NC		Not used
127	AVSS		Analog power GND
128	SL	I	TUNER : Signal level input

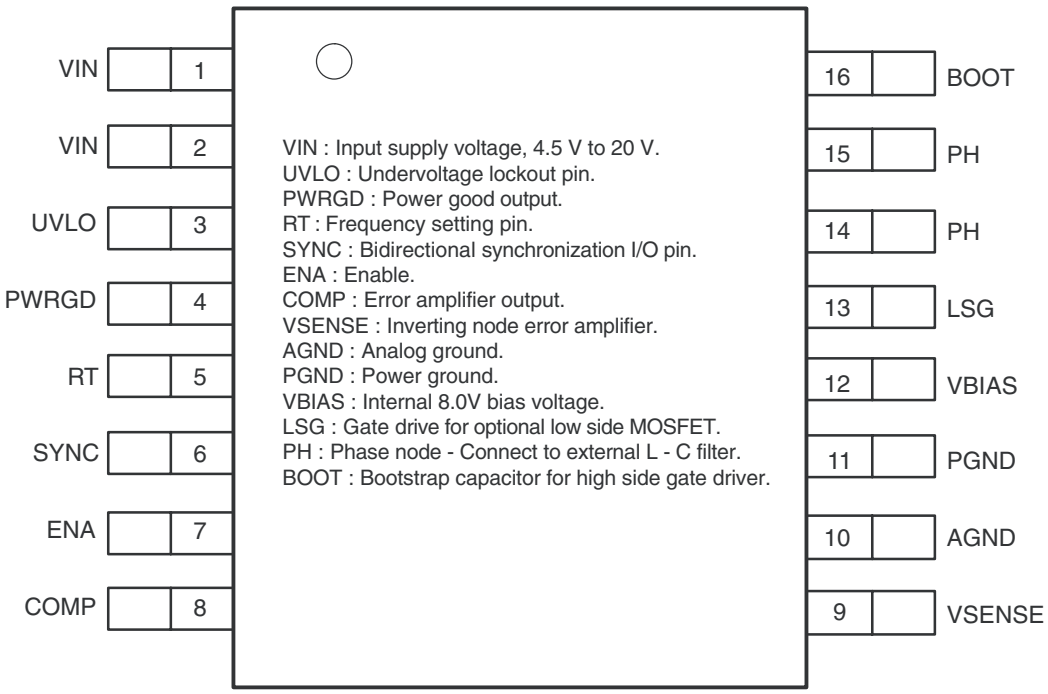
* PEG186A



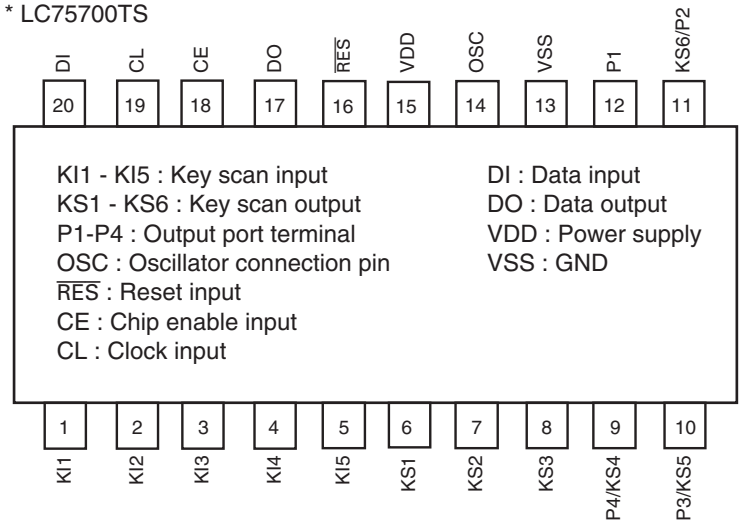
* S-812C25AMC-C2F



TPS54350PWP


VIN 1
VIN 2
UVLO 3
PWRGD 4
RT 5
SYNC 6
ENA 7
COMP 8
16 BOOT
15 PH
14 PH
13 LSG
12 VBIAS
11 PGND
10 AGND
9 VSENSE
VIN : Input supply voltage, 4.5 V to 20 V.
UVLO : Undervoltage lockout pin.
PWRGD : Power good output.
RT : Frequency setting pin.
SYNC : Bidirectional synchronization I/O pin.
ENA : Enable.
COMP : Error amplifier output.
VSENSE : Inverting node error amplifier.
AGND : Analog ground.
PGND : Power ground.
VBIAS : Internal 8.0V bias voltage.
LSG : Gate drive for optional low side MOSFET.
PH : Phase node - Connect to external L - C filter.
BOOT : Bootstrap capacitor for high side gate driver.

* LC75700TS

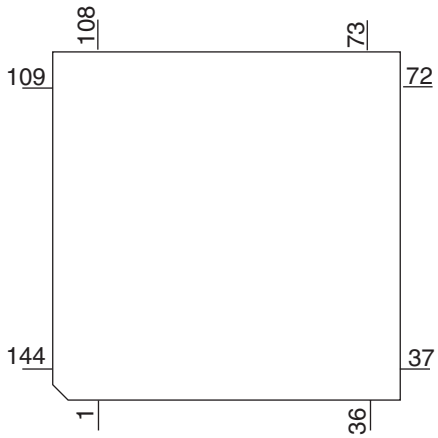


● Pin Functions(UPD63763AGJ)

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Power supply for digital circuits
2	D1.GND		GND for 1.6V digital circuits
3	$\overline{\text{RESET}}$	I	Reset input
4-8	AB12-8	I	Address bus 12-8 from the microcomputer
9-16	AD7-0	I/O	Address/data bus 7-0 to the microcomputer
17	$\overline{\text{CS}}$	I	Chip selection input
18	ASTB	I	Address strobe input
19	$\overline{\text{READ}}$	I	Control signals(read) input
20	$\overline{\text{WRITE}}$	I	Control signals(write) input
21	$\overline{\text{WAIT}}$	O	Control signals(wait) output
22	INTQ	O	Interruption signals to the external microcomputer output
23, 24	IFMODE0, 1	I	Switching the microcomputer I/F input 0, 1
25	D1.VDD		Power supply for 1.6V digital circuits
26	DA.VDD		Power supply for DAC
27	ROUT	O	Output of audio for the right channel
28	DA.GND		GND for DAC
29	REGC		Connected to the capacitor for band gap
30	DA.GND		GND for DAC
31	LOUT	O	Output of audio for the left channel
32	DA.VDD		Power supply for DAC
33	X.VDD		Power supply for the crystal oscillator
34	XTAL	I	Connected to the crystal oscillator(16.9344MHz)
35	$\overline{\text{XTAL}}$	O	Connected to the crystal oscillator(16.9344MHz)
36	X.GND		Ground for the crystal oscillator
37	VDDREG15		Control of 1.6V regulator
38	PWMSW0	I	Setup 0 for PWM input(SD, MD)
39-41	TEST3-1	I	Connected to GND
42	PWMSW1	I	Setup 1 for PWM input(FD, TD)
43	TESTEN	I	Connected to GND
44	D1.GND		GND for 1.6V digital circuits
45	DIN	I	Input of audio data
46	DOUT	O	Output of audio data
47	SCKIN	I	Clock input for audio data
48	SCKO	O	Clock output for audio data
49	LRCKIN	I	Input of LRCK for audio data
50	LRCK	O	Output LRCK for audio data
51	$\overline{\text{XTALEN}}$	I	Permission to oscillate 16.9344MHz
52	D1.VDD		Power supply for 1.6V digital circuits
53	RFCK/HOLD	O	Output of RFCK/HOLD signal
54	WFCK/MIRR	O	Output of WFCK/MIRR signal
55	PLCK/RFOK	O	Output of PLCK/Output of RFOK
56	LOCK/RFOK	O	Output of LRCK/Output of RFOK
57	C1D1/C8M	O	Information on error correction output/C8M : 8MHz
58	C1D2/C16M	O	Information on error correction output/C16M : 16MHz
59	C2D1/RMUTE	O	Information on error correction output/Mute for Rch
60	C2D2/LMUTE	O	Information on error correction output/Mute for Lch
61	C2D3/SHOCK	O	Information on error correction output/Detection of vibration
62	D1.GND		GND for 1.6V digital circuits
63	C33M	O	Output of 33.8688MHz(CLK for SDRAM)
64	($\overline{\text{RCS}}$)	O	DRAM $\overline{\text{CS}}$ output
65	RA11	O	Output of DRAM address 11
66	(CKE)	O	Output of DRAM CKE
67	$\overline{\text{RAS}}$	O	Output of DRAM $\overline{\text{RAS}}$
68	$\overline{\text{CAS0}}$(LDQM)	O	Output of DRAM lower $\overline{\text{CAS}}$(LDQM)
69	$\overline{\text{CAS1}}$(UDQM)	O	Output of DRAM upper $\overline{\text{CAS}}$(UDQM)
70	$\overline{\text{WE}}$	O	Output of DRAM $\overline{\text{WE}}$
71	$\overline{\text{OE}}$($\overline{\text{CAS}}$)	O	Output of DRAM $\overline{\text{OE}}$($\overline{\text{CAS}}$)
72	D.GND		Ground for digital circuits
73-88	RDB0-15	I/O	Input/output of DRAM data0-15
89-99	RA0-10	O	Output of DRAM address0-10

Pin No.	Pin Name	I/O	Function and Operation
100	D.VDD		Power supply for digital circuits
101	FD+	O	Output of focus drive PWM +
102	FD-	O	Output of focus drive PWM -
103	TD+	O	Output of tracking drive PWM +
104	TD-	O	Output of tracking drive PWM -
105	SD+	O	Output of thread drive PWM +
106	SD-	O	Output of thread drive PWM -
107	MD+	O	Output of spindle drive PWM +
108	MD-	O	Output of spindle drive PWM -
109	REFOUTSV	O	REFOUT for servo
110	AD.VDD		Power supply for ADC
111	EFM	O	Output of EFM signals
112	ASY	I	Input of asymmetry
113	ATEST	O	Analog tests output
114	RFI	I	Input of RF
115	AD.GND		Ground for the analog system
116	AGCO	O	Output of RF(AGC)
117	C3T	O	Connection to the capacitor for detecting 3T
118	AGCI	I	Input of AGC
119	RFO	O	Output of RF(AGC)
120, 121	EQ2, 1	I	Equalizer input 2, 1
122	RF2-	I	Reversal input of RF2
123	RF-	I	Reversal input of RF
124	A.GND		Ground for the analog system
125	A	I	Input of A
126	C	I	Input of C
127	B	I	Input of B
128	D	I	Input of D
129	F	I	Input of F
130	E	I	Input of E
131	VREFIN	I	Input of reference voltage
132	A.VDD		Power supply for the analog system
133	REFOUT	O	Output of reference voltage
134	REFC	I	Connected to the capacitor for output of REFOUT
135	FE-	I	Reversal input of FE
136	FEO	O	Output of FE
137	ADIN	I	Input of FE, TE A/D converter
138	TE-	I	Reversal input of TE
139	TEO	O	Output of TE
140	TE2	O	TE2 output
141	TEC	I	TEC input
142	LD	O	Output of LD
143	PD	I	Input of PD
144	D.GND		Ground for digital circuits

* UPD63763AGJ

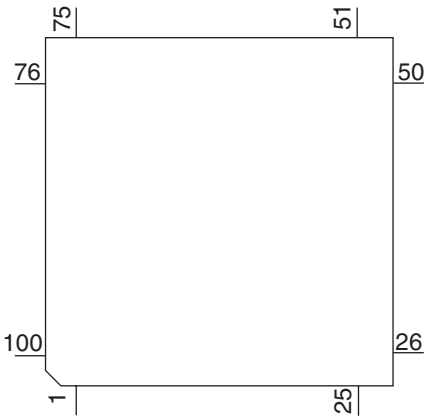


● Pin Functions(PE5455A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	AVREF			A power supply Positive power supply(5V)
2	AVSS			A power supply GND
3	EMP	O	C	The evaluation terminal for shocking proofs
4	CLAMP	I		Clamp SW sense input
5	EVDD			E power supply Positive power supply
6	CAMVOL	O	C	CAM motor driver output voltage change
7	E/LVOL1	O	C	ELV/LOAD motor driver output voltage change
8	IC/FLMD0			IC : VSS direct connection/FLMOD0 : Pull-down
9	VDD			Positive power supply(5V)
10	REGC			Connected to the capacity stabilizing output of the regulator
11	VSS			GND
12	X1	I		Oscillator connection for mainclock
13	X2			Oscillator connection for mainclock
14	$\overline{\text{RESET}}$	I		System reset input
15	XT1	I		Connected to the oscillator for subclock
16	XT2			Connected to the oscillator for subclock(Open)
17	PULLDOWN			Connected to EVDD or EVSS via the resistor
18	EMC			The evaluation terminal for shocking proofs
19	$\overline{\text{XINT}}$	I	C	CD LSI interruption signal input
20	NC			Connected to VSS via the resistor
21	$\overline{\text{BRST}}$	I		IIC-Bus reset input
22	BSI	I		IIC-Bus serial data input
23	BSO	O	C	IIC-Bus serial data output
24	$\overline{\text{BSCK}}$	O	C	IIC-Bus clock output
25	FTXD	O	C	For flash rewriting(transmitted signal)
26	FRXD	I		For flash rewriting(received signal)
27	BRXEN	I/O	/C	IIC-Bus reception enable input/output
28	BSRQ	I/O	/C	IIC-Bus request input/output
29	NC			Not used
30	E/LVOL2	O	C	ELV/LOAD motor driver output change
31	E/LREV	O	C	ELV/LOAD motor control output(REV)
32	E/LFWD	O	C	ELV/LOAD motor control output(FWD)
33	EVSS			E power supply GND
34	EVDD			E power supply Positive power supply
35-37	RAM0-2	O	C	RAM level output
38	SPDFG	I		SPDL FG pulse input
39-42	NC			Not used
43	INISW	I		Disc sense input for initialization
44	$\overline{\text{SVCONT}}$	O	C	Standard voltage change output
45	$\overline{\text{EPCS}}$	I		BBOX sense input
46	NC			Not used
47	CONT	O	C	Servo driver power supply control output
48	$\overline{\text{XRST}}$	O	C	CD LSI reset control output
49	VDCONT	O	C	VD power supply control output
50	ROMDATA	I/O	/C	E2PROM data input/output
51	ROMCS	O	C	E2PROM chip selection output
52	ROMCK	O	C	E2PROM clock output
53	$\overline{\text{EMPH}}$	O	C	Emphasis information output
54	DSPMUTE	O	C	DOUT mute output
55	CDMUTE	O	C	CD mute control output
56	$\overline{\text{CDEJECT}}$	I		It is EJECT at the time of L detection during 1 second
57	LOADSWL	I		Load operation sense input
58	LOADSWR	I		Load operation sense input
59	$\overline{\text{XCS}}$	O	C	CD LSI chip selection output
60	ROM1K	I		EEPROM 2k/1k change input
61	$\overline{\text{XWAIT}}$	I		CD LSI write control signal output
62	CLKOUT	O	C	Internal system clock output(Open)
63	LOCK	I		Spindle lock input
64	NC			Not used
65	$\overline{\text{XWRITE}}$	O		CD LSI write control signal output

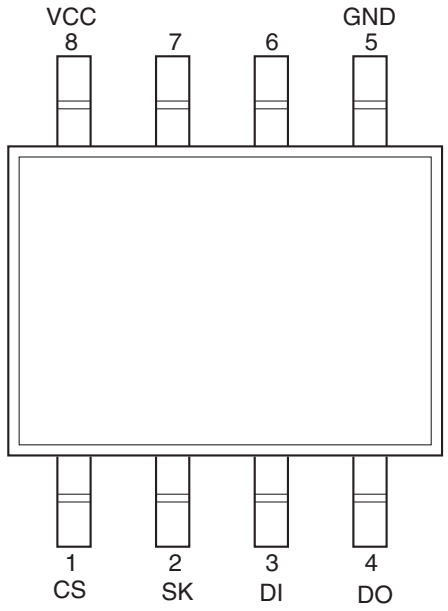
Pin No.	Pin Name	I/O	Format	Function and Operation
66	NC			Not used
67	$\overline{\text{XREAD}}$	O		CD LSI read control signal output
68	XASTB	O		CD LSI address strobe output
69	BVSS			B power supply GND
70	BVDD			B power supply Positive power supply
71-86	AD0-15	I/O	/C	Address/data Bus 0-15
87,88	NC			Not used
89	CAMREW	O	C	CAM motor control output
90	CAMFWD	O	C	CAM motor control output
91	LODPHT			Load operation photo sense
92	ELVSNS	I		ELV position select input
93	ELVREF			ELV sense reference voltage
94	CAMSNS	I		CAM position select input
95	CAMREF			CAM sense reference voltage
96	TESTIN	I		Chip check test program starting input
97	HOME	I		Home SW sense input
98	TEMP			Temperature information sense input
99	VDSENS			VD power supply short sense input
100	NC			Not used

*PE5455A

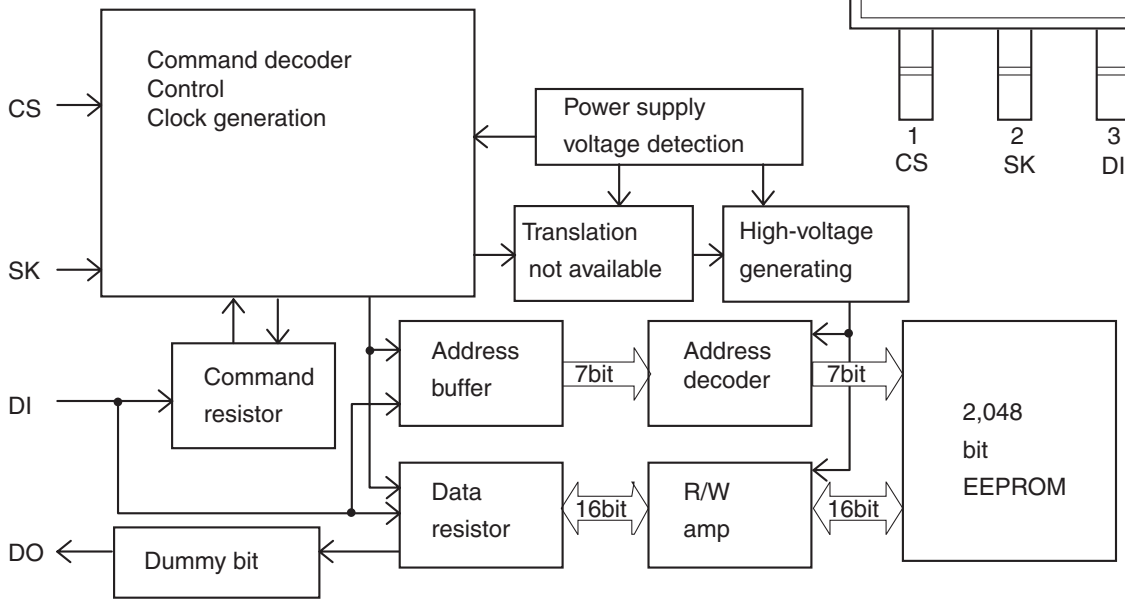


Format	Meaning
C	CMOS

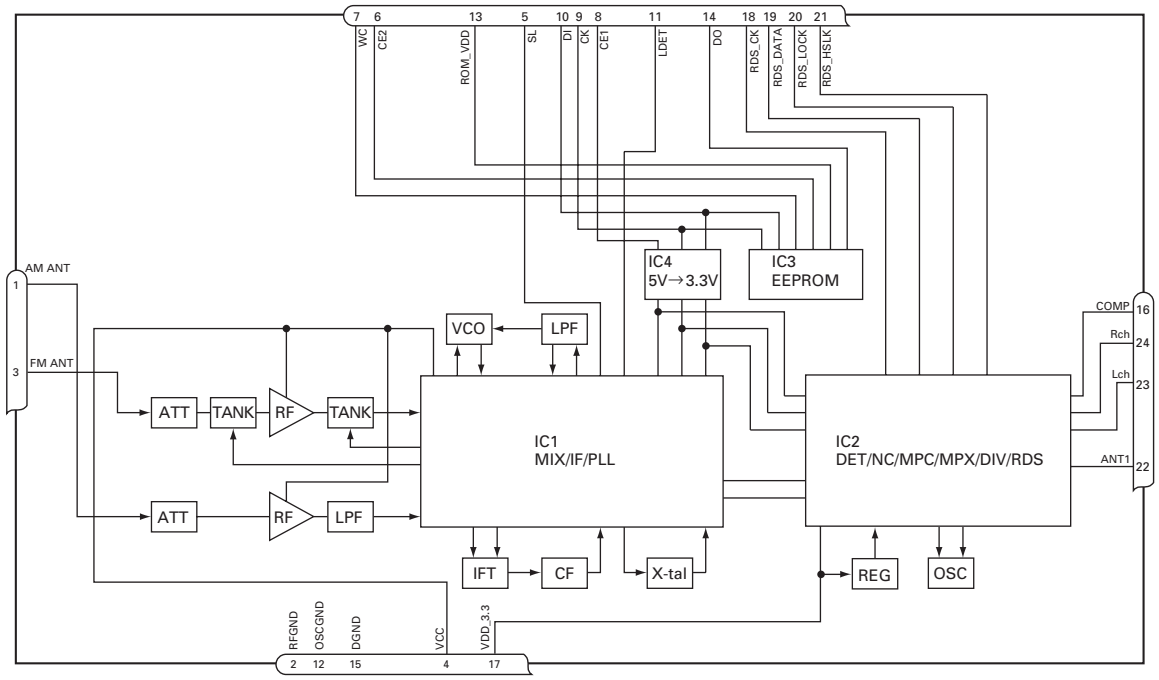
*BR93L56RFVM-W



● Block Diagram



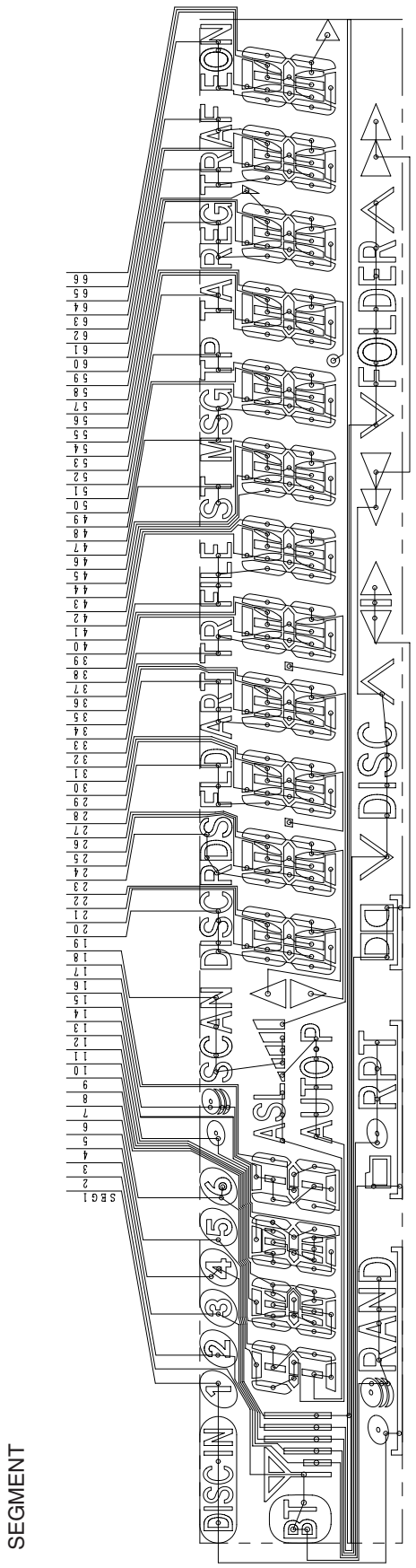
● FM/AM Tuner Unit

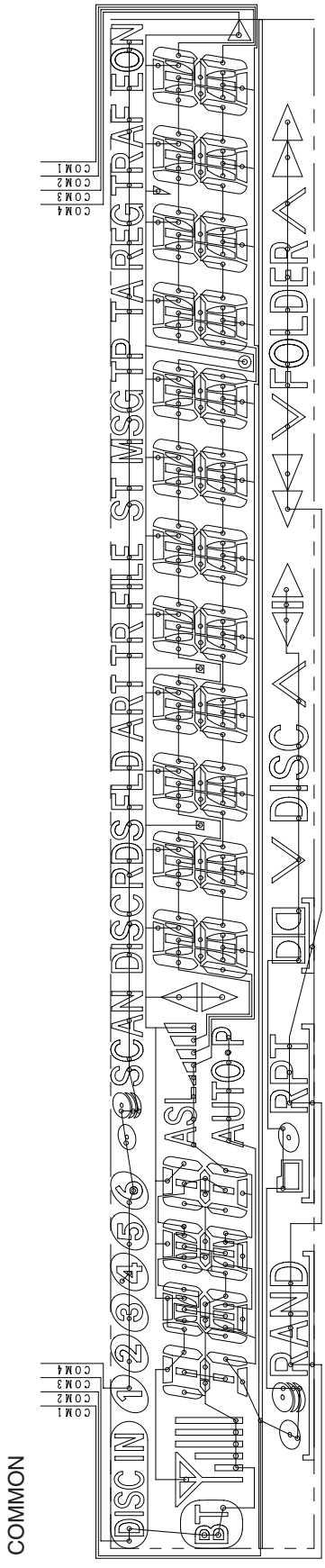


No.	Symbol	I/O	Explain	
1	AMANT	I	AM antenna input	AM antenna input high impedance AMANT pin is connected with an all antenna by way of 33μH. (LAU type inductor) A series circuit including an inductor and a resistor is connected with RF ground for the countermeasure against the hum of power transmission line.
2	RFGND		RF ground	Ground of antenna block
3	FMANT	I	FM antenna input	Input of FM antenna 75Ω Surge absorber is necessary.
4	VCC		power supply	The power supply for analog block. D.C 8.4V ± 0.3V
5	SL	O	signal level	Output of FM/AM signals level
6	CE2	I	chip enable-2	Chip enable for EEPROM "Low" active
7	WC	I	write control	You can write EEPROM, when EEPROM write control is "Low". Ordinary non connection
8	CE1	I	chip enable-1	Chip enable for AF•RF "High" active
9	CK	I	clock	Clock data input
10	DI	I	data in	Data input
11	LDET	O	lock detector	"Low" active
12	OSCGND		osc ground	Ground of oscillator block
13	ROM_VDD		power supply	Power supply for EEPROM pin 13 is connected with a power supply of micro computer.
14	DO	O	data out	Data output
15	DGND		digital ground	Ground of digital block
16	COMP	O	composite output	FM composite signal output.
17	VDD_3.3		power supply	The power supply for digital block. 3.3V ± 02V
18	RDS_CK	O	RDS clock	Output of RDS clock(2.5V)
19	RDS_DATA	O	RDS data	Output of RDS data(2.5V)
20	RDS_LOCK	O	RDS lock	Output unit "High" active(2.5V) (RDS_LOCK turns over by the external transistor. "Low" active)
21	RDS_HSLK	O	RDS high speed lock	Output unit "High" active(2.5V)(RDS_HSLK turns over by the external transistor. "Low" active)
22	ANT1		diversity antenna control	Antenna switch control signal output. "High" : MAIN, "Low"=SUB
23	L ch	O	L channel output	FM stereo "L-ch" signal output or AM audio output
24	R ch	O	R channel output	FM stereo "R-ch" signal output or AM audio output

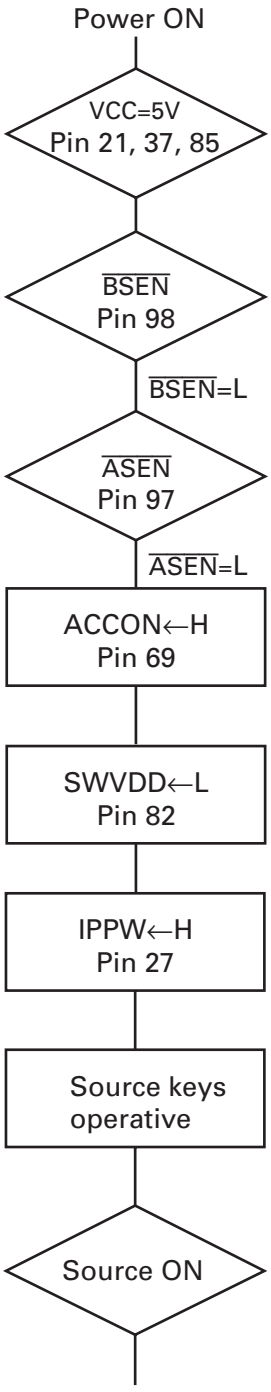
7.2.2 DISPLAY

● **CAW1867**



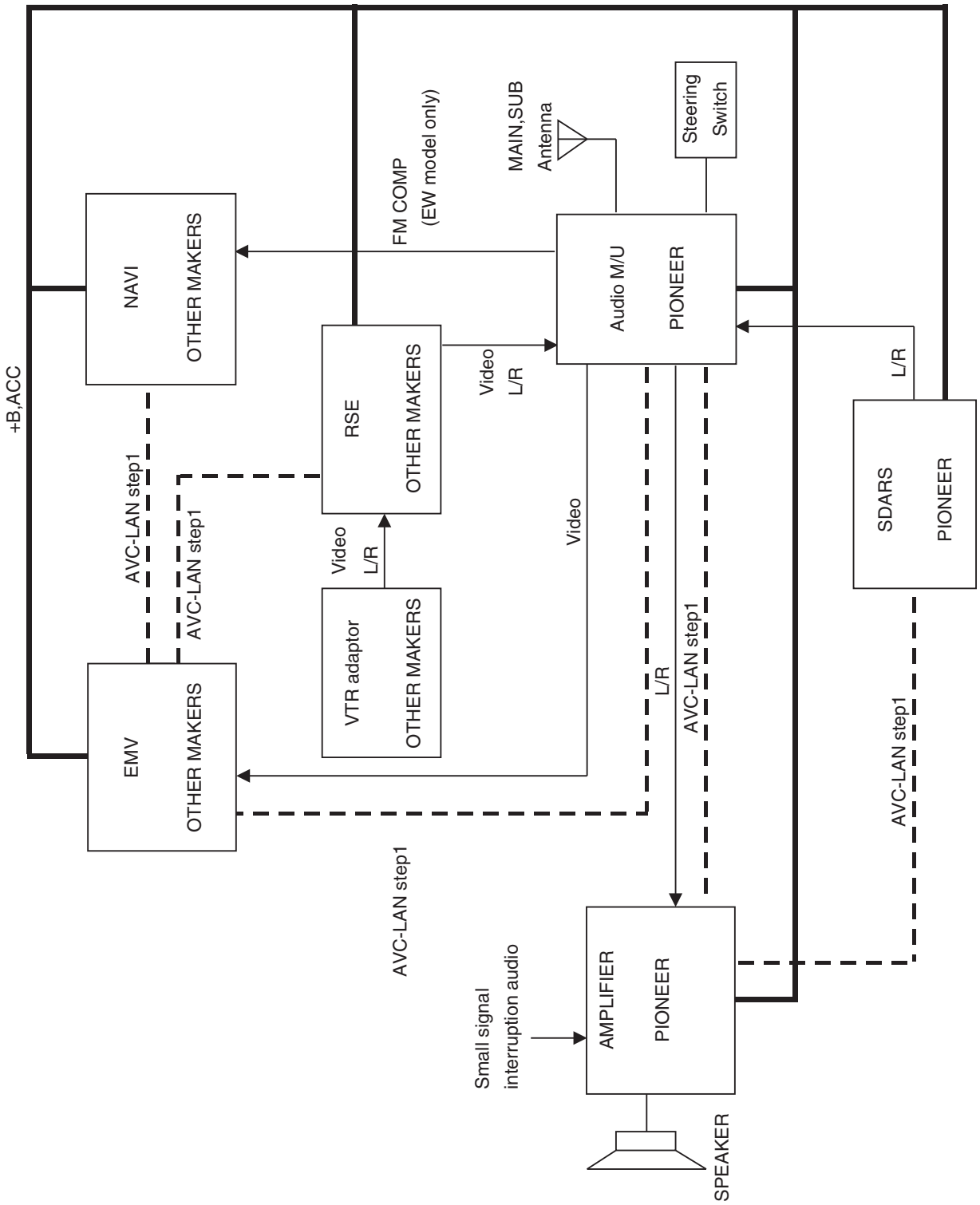


7.3 EXPLANATION
7.3.1 OPERATIONAL FLOW CHART



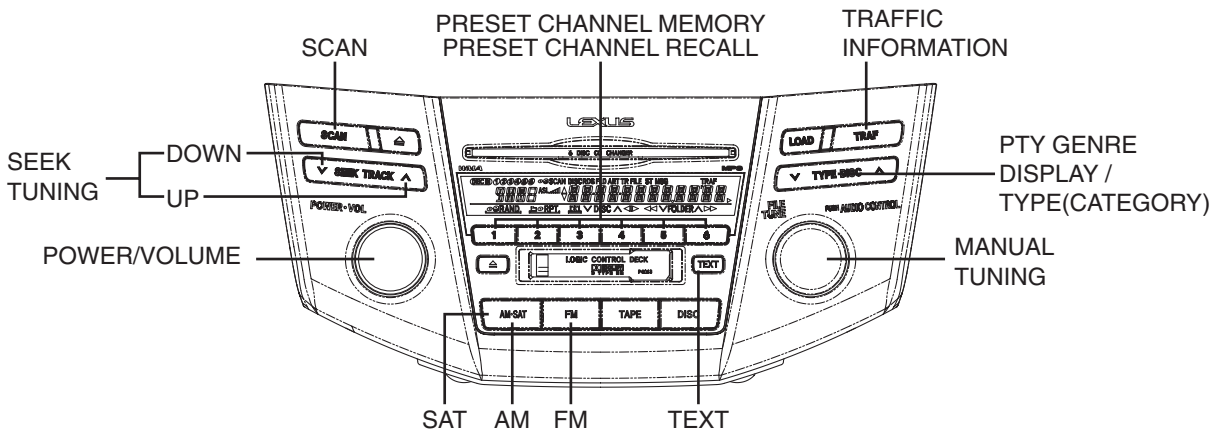
Completes power-on operation.
(After that, proceed to each source operation)

7.3.2 SYSTEM BLOCK DIAGRAM

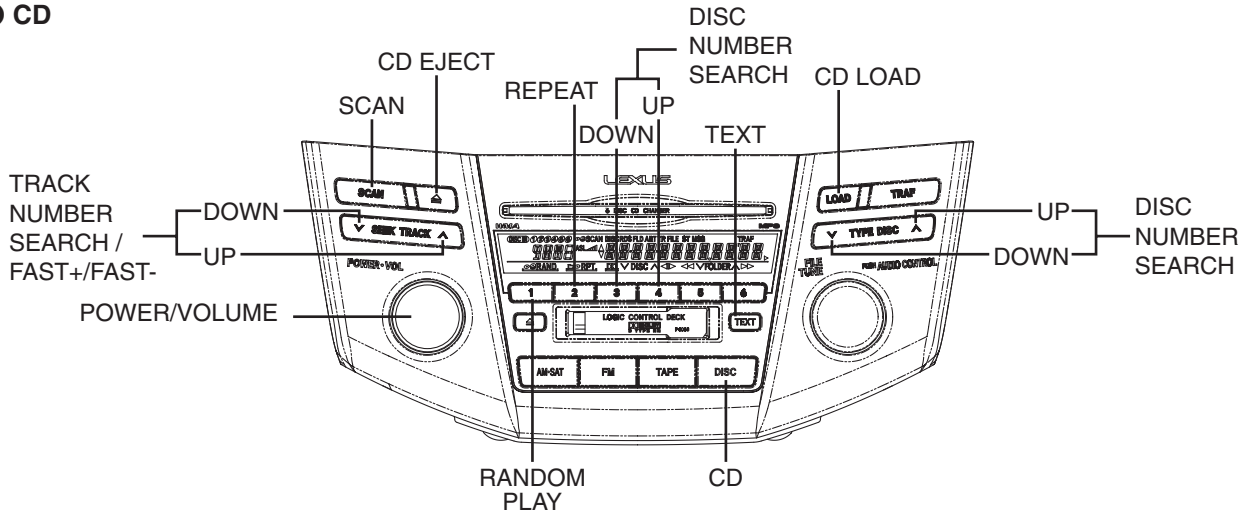


8. OPERATIONS

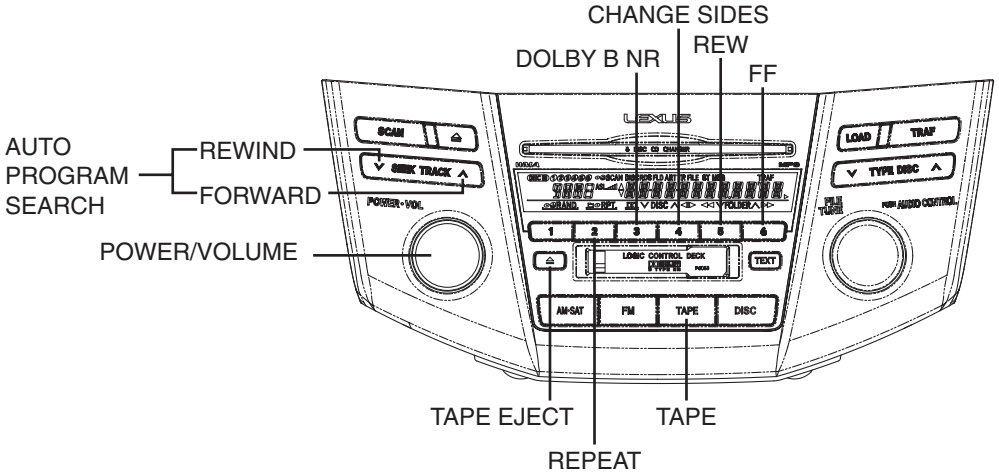
● RADIO



● CD



● CASSETTE



A

B

C

D

E

F

● Jigs List

Name	Jig No.	Remarks
Assembly jig	GGF1538	Assembly jig for G3, 3pcs
Extension Cable	GGD1472	For system confirmation
Extension Cord	GGD1421	
Extension Cord	GGD1422	
Extension Cord	GGD1423	
Extension Cable	GGD1451	For system confirmation

● Grease List

Name	Jig No.	Remarks
PG641	GEM1024	Mechanism Unit(Service)

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

● Internal multi-CD shipping position mode setting

Auto change to the SHIP MODE after ALL DISC EJECT.

NOTE :
Do not switch off ACC and +B at the same time immediately after ejecting DISC.
(Switch off +B at 5 seconds after the shutter door is closed.)

(* PICK UP is made to be automatically shifted to SHIP MODE. However, the above action may discontinue operation, disabling a shift to SHIP MODE.)

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
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PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

ⓒ**PIONEER CORPORATION 2005**

K-ZZW. DEC. 2005 Printed in Japan

Pioneer sound.vision.soul

Service Manual

ORDER NO.
CRT3467

CD MECHANISM MODULE(G3)

CX-3168
CX-3116

X-3168 : TOYOTA
X-3116 : FORD

● This service manual describes the operation of the CD mechanism module incorporated in models listed in the table below.
● When performing repairs use this manual together with the specific manual for model under repair.

Model	Service Manual	CD Mechanism Module
AVIC-XD1057ZF/UC AVIC-XD1557ZF/UC AVIC-XD1957ZF/UC	CRT3458	CXK7300
DEH-MG2057ZF/XU/UC	CRT3480	CXK7300
DEX-MG8157ZT/UC DEX-MG8057ZT/XU/UC	CRT3486	CXK7310
DEH-MG8257ZT/UC	CRT3487	CXK7310

CONTENTS

1. CIRCUIT OVER VIEW 2
2. MECHANISM OVER VIEW 23
3. DISASSEMBLY 35
4. HOW TO ASSEMBLE 45

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K-ZZU. APR. 2005 Printed in Japan

1. CIRCUIT OVER VIEW

Concerning CD LSI, beside the core DSP, LSI which unifies DAC once used as peripheral circuit or RF amp is the mainstream, and UPD63763AGJ,UPD63761AGJ is a multifunction LSI which has a plenty of functions such as existing CD and replay CD-ROM storing MP3/WMA file by embedding CD-ROM decoder or MP3/WMA decoder.
*X-3116 has built-in WMA decoder by each LSI function, but is not corresponded to its specification.

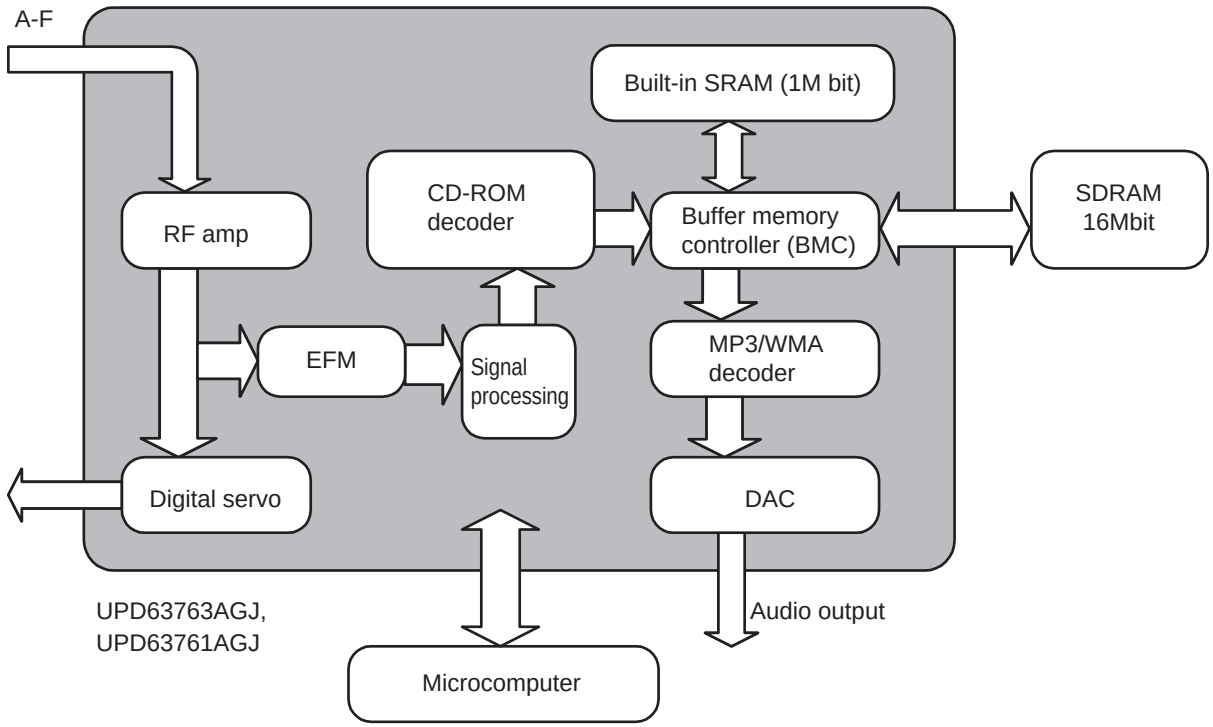


Fig.1 UPD63763AGJ(X-3168),UPD63761AGJ(X-3116) block diagram

1.1 PREAMP SECTION

The preamp section is processing pick-up output signal and generating signal to servo section, demodulator section and control section of the next stage. The signal from pick-up is I-V converted by photodetector-built-in preamp in the pick-up, then added by RF amp and created RF, FE, TE, TE empty cross signal. This preamp section is embedded in CD LSI UPD63763AGJ,UPD63761AGJ (IC201), and each section of it is explained below. Since the spec of this LSI is single power supply (+3.3V), reference voltage of this LSI and pick-up should be all REFO (1.65V). REFO is the output from REFOUT in the LSI through buffer amp, and its output comes from the number 133 pin of the LSI. All measurement is based on the REFO.
NOTE: Never short-circuit REFO and GND.

1.1.1 APC circuit (Automatic Power Control)

Since light output has large minus temperature characteristics when laser diode is operated under constant current, it is necessary to control current by monitor diode so that constant output is maintained. This is APC circuit. LD current is generated by measuring current between LD1 and V3 R3 and dividing the value by 7.5 , and its current value should be about 30mA.

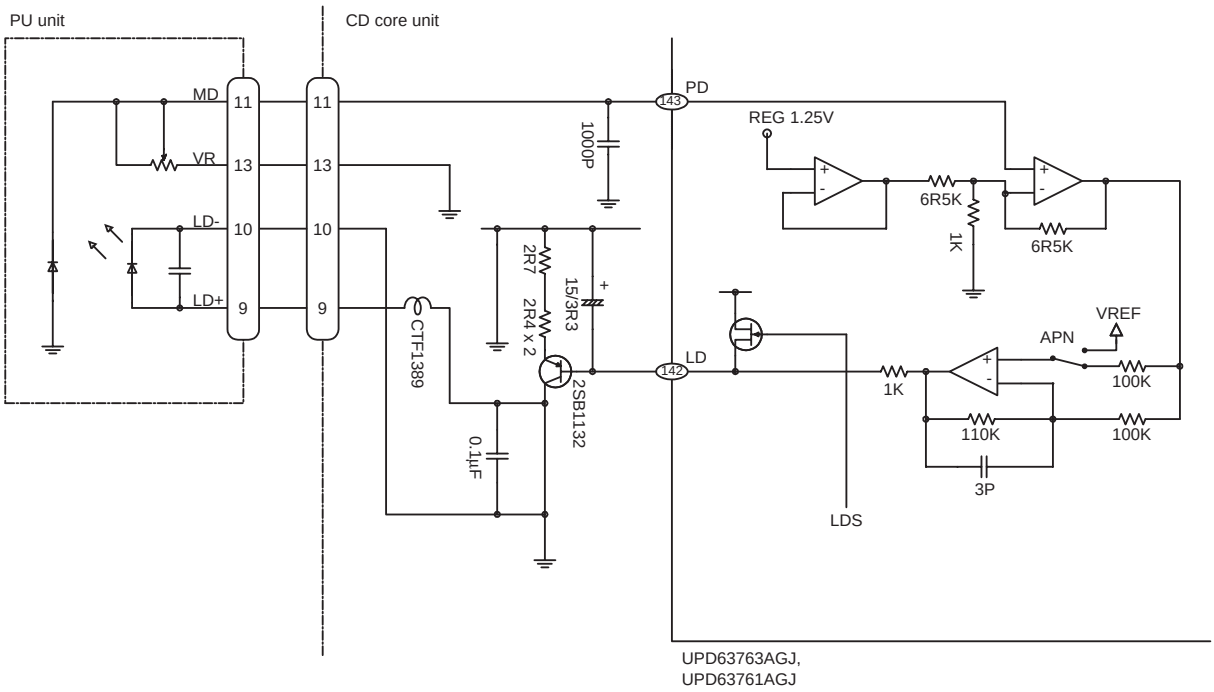


Fig.2 APC

1.1.3 Focus error amp

The photodetector output (A+C), (B+D) comes from the number 91 pin as FE signal which is (A+C-B-D) through differential amp and then error amp. The low frequency of voltage FE is showed in the following formula.
FE=(A+C-B-D) X 8.8k / 10k X 111k / 61k X 160k / 64k =(A+C-B-D) X 4
The FE output generates 1.5Vpp of S curve based on REFO. The cut-off frequency of the amp in back stage is 14.6kHz.

1.1.4 RFOK circuit

This circuit is signal expressing timing of focus-close and focus-close condition during playing, and output from the number 55 pin as RFOK signal output. During playing at focus-close, "H" is output as signal.
Since RFOK signal holds a peak of DC level of RFAGCI at digital section in back stage and is converted and generated by certain threshold level, RFOK is "H" without a bit. Therefore, focus-close is also performed in disc mirror surface. This signal is supplied to a microcomputer via LPF as FOK signal and used for protection and switching gain of RF amp.

1.1.5 Tracking error amp

The photodetector output E, F comes from the number 139 pin, taking (E-F) as TE signal through a differential amp and then an error amp. The low frequency of TE is showed in the following formula.
TEO=(E-F) X 63k / 112k X 160k / 160k X 181k / 45.4k X 160k / 80k = (E-F) X 4.48

TE output generates 1.15Vpp level TE waveform based on REFO. The cut-off frequency of the amp in back stage is 21.1kHz.

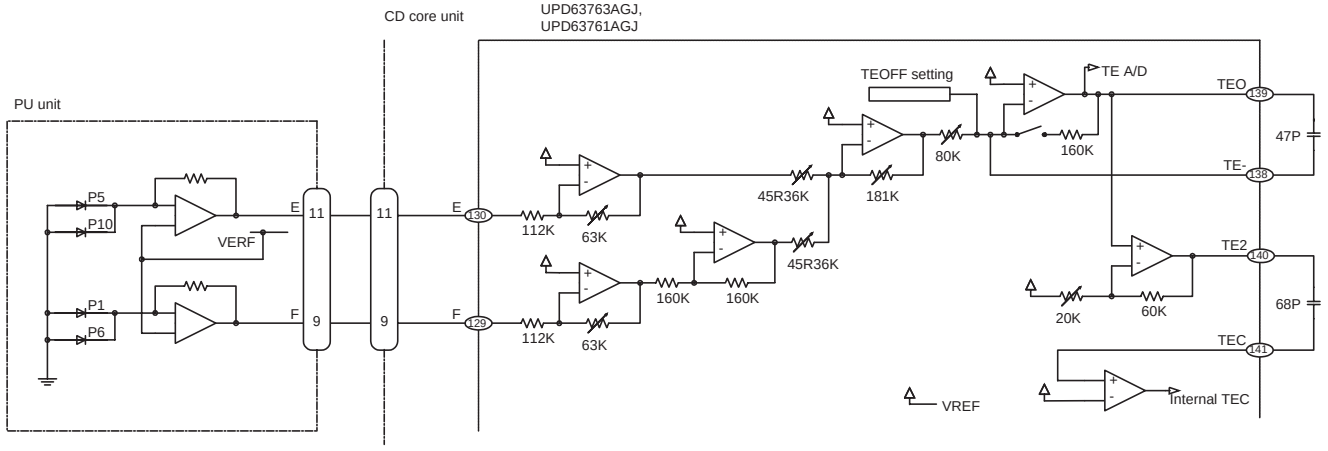


Fig.3 TE

1.1.6 Tracking empty cross amp

The tracking empty cross signal (hereafter, TEC signal) is the signal amplifying TE signal for 4 times and used to find an empty cross point of tracking error. The purpose for finding the empty cross point is;
① To use for track count at carriage movement and track jump
② To use for detecting direction of lens movement at tracking close (used in a tracking brake circuit described later)
The frequency range of TEC signal is 300 Hz - 20kHz, and voltage TEC=TE level X 4.
That is, TEC level is 4.62V as calculated, and this level is over D range of an operation amp and so that the signal is clipped, but only empty cross point is used in CD LSI, so there is no problem.

1.1.7 EFM circuit

EFM circuit is the circuit for converting RF signal into "0" "1" digital signal. AGCO signal output from the number 116 pin is AC-combined, input to the number 114 pin, and supplied to EFM circuit.
Since RF vertical asymmetry occurred because of the lack of RF signal by a scratch or dirt on a disc, and quality variation of disc production is not deleted only by AC-combination, reference voltage ASY of EFM comparator is controlled, taking advantage of the fact that the occurring rate of "0" "1" in EFM signal is 50%. In this way, the comparator level is always around the center of RFO signal. This reference voltage ASY is generated with passing EFM comparator output through LPF. EFM signal is output from the number 111 pin.

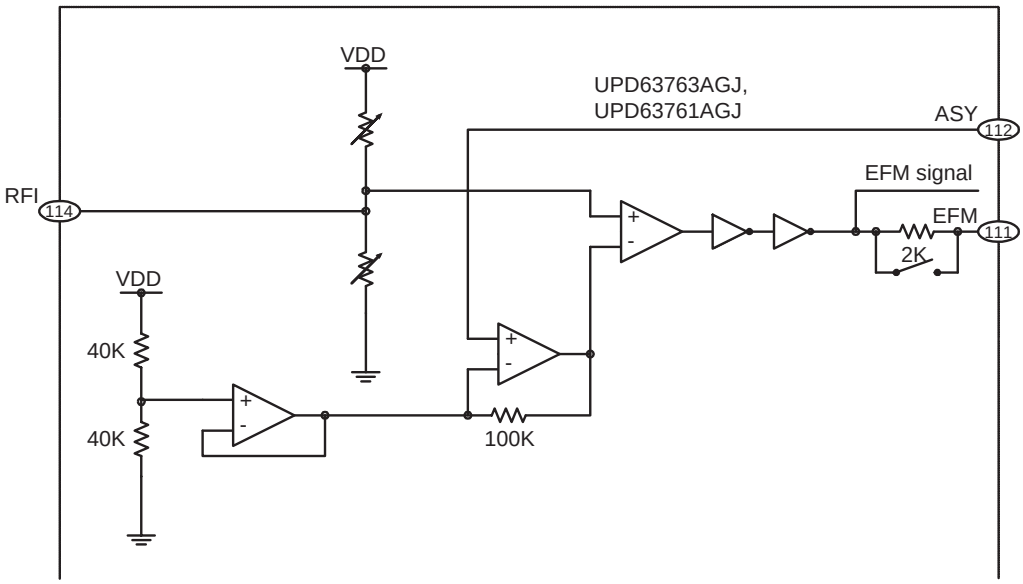


Fig.4 EFM

1.2 SERVO SECTION (UPD63763AGJ,UPD63761AGJ: IC 201)

The servo section operates servo control such as equalizing of error signal, in-focus, track jump, carriage move, etc. DSP is section for signal processing and operates data decoding, error correction, interpolation processing, etc. FE, TE signal generated in preamp stage is A/D converted and outputs drive signal of focus, tracking, and carriage system via servo block. And EFM signal is decoded in the signal processing section and outputs audio signal after D/A convert via D/A converter finally. In addition, in this decoding process, error signal of a spindle servo is generated, and supplied to the spindle servo section, and outputs drive signal for the spindle. Each drive signal of focus, tracking, carriage and spindle is amplified by the driver IC BD7962FM (IC302) after that and supplied to each actuator and motor.

1) Focus servo system

The main equalizer of focus servo is made up of digital equalizer section. The fig 10 shows a block diagram of focus servo.
In the focus servo system, it is necessary to bring a lens within in-focus range to focus-close. In order to do that, triangle wave of focus search voltage moves a lens up and down to find in-focus point. During that time, a spindle motor is kicked to maintain rotation at the fixed speed. The servo LSI monitors FE signal & RFOK signal, and operates focus-close automatically in appropriate point. The focus-close is performed when following 3 conditions are set;
① A lens is moving from away to near toward a disc.
② RFOK= "H"
③ Just at the moment when FZC signal is once over the threshold of FZD register and latched to "H" again (the edge of FDZ). As the result, FE converges "0" (=REFO).

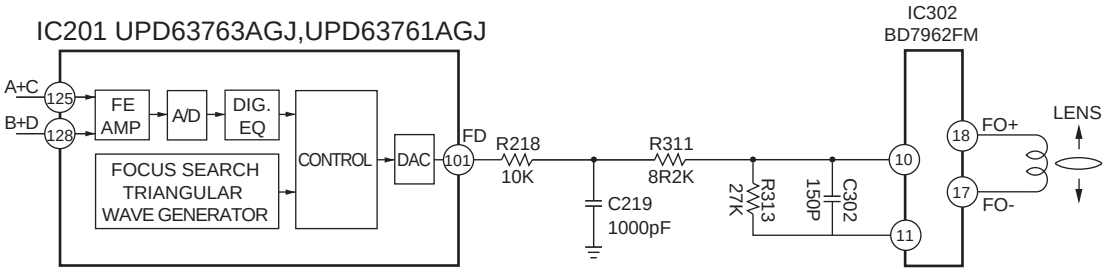


Fig.5 Focus servo block diagram

When the conditions described above are set and focus-close is performed, XSI terminal becomes "H" -> "L" and after 40ms, the microcomputer starts to monitor RFOK signal through LPF.
When RFOK signal is detected as "L", the microcomputer takes a various action such as protection.
Fig 11 shows a series of action concerning focus-close (this figure shows a case when focus-close is impossible).
If pressing focus-close button in condition that a select of focus mode is "display 01" in the test mode, it is possible to check S curve, search voltage and actual lens operation.

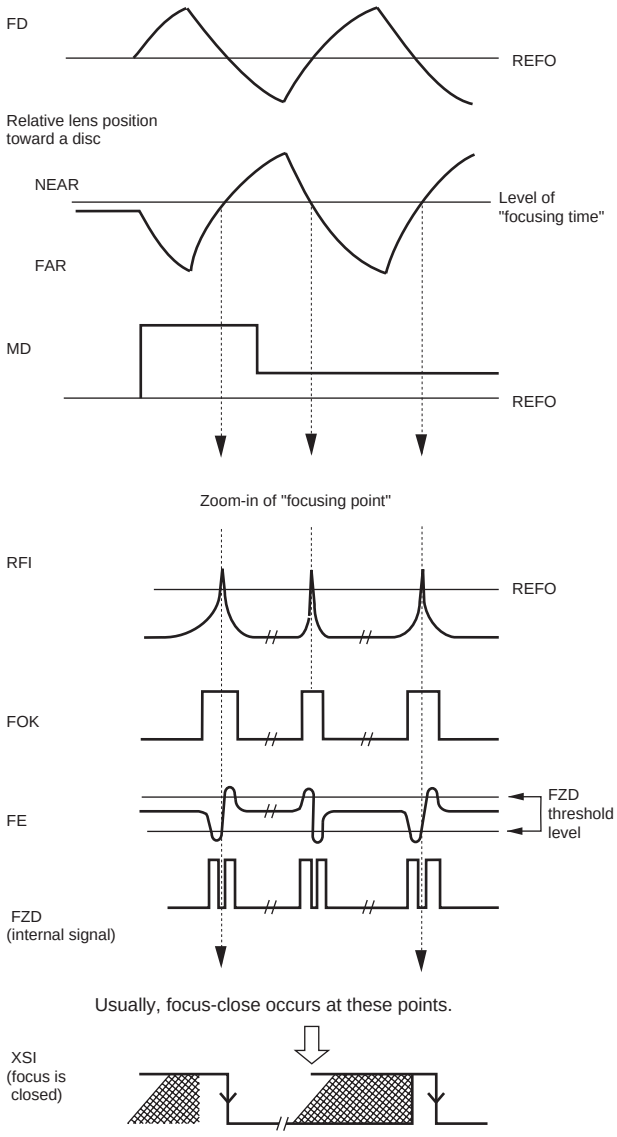


Fig.6 Focus-close sequence

2) Tracking servo system

The main equalizer of tracking servo is made up of digital equalizer section. A block diagram of tracking servo is showed in Fig 12.

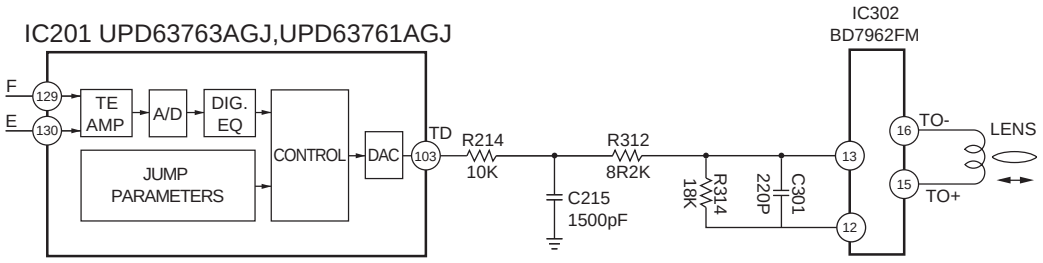


Fig.7 Tracking servo block diagram

a) Track jump

Track jump is performed automatically by the command of the microcomputer according to the auto-sequence function inside LSI. In this system, up to 100 tracks of multi-jump is prepared for using as track jump at the search time. In the test mode, 1, 4, 10, 32, 32 X 3 jump of it and carriage move can be checked by mode selection. For jumps up to 4 tracks, about half number of total jumps (e.g., about 2 tracks are set for 4 tracks) are set by microcomputer. The speed control (which counts the length of TEC interval and controls TD so as to keep a constant frequency) is conducted for any jump up to 5-100 tracks and a target number of total tracks is set by microcomputer. The established number of tracks is counted by using TEC signal.

From the moment when the set number is counted, brake pulse is output for defined period of time, and a lens is stopped. In this way, it is possible to close tracking and continue normal play.

In addition, gain up of a tracking servo in the brake circuit ON is performed for 50ms after stopping brake pulse in order to increase lead-in of servo during track jump.

FF/REW operation in normal mode is carried out with executing a single jump continuously. The speed is varied according to place of destination and is about 10 or 20 times of normal mode.

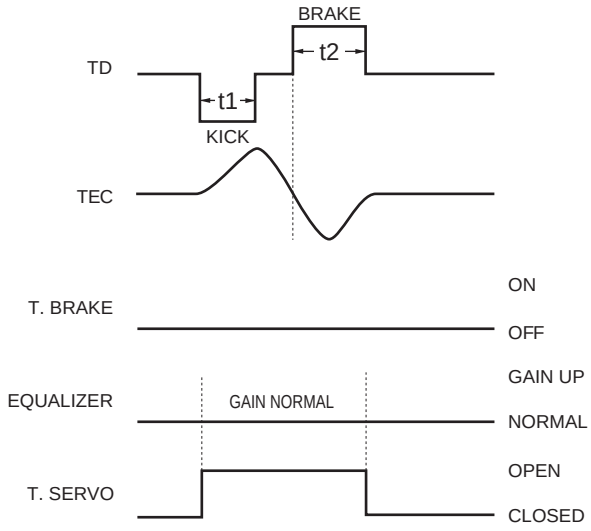


Fig.8 Single track jump

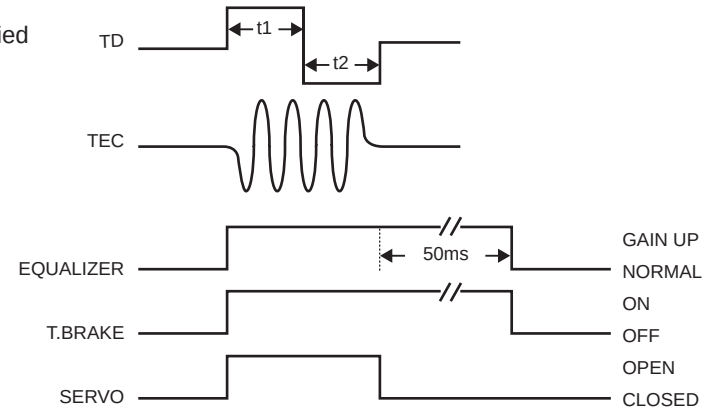


Fig.9-1 Multi-track jump

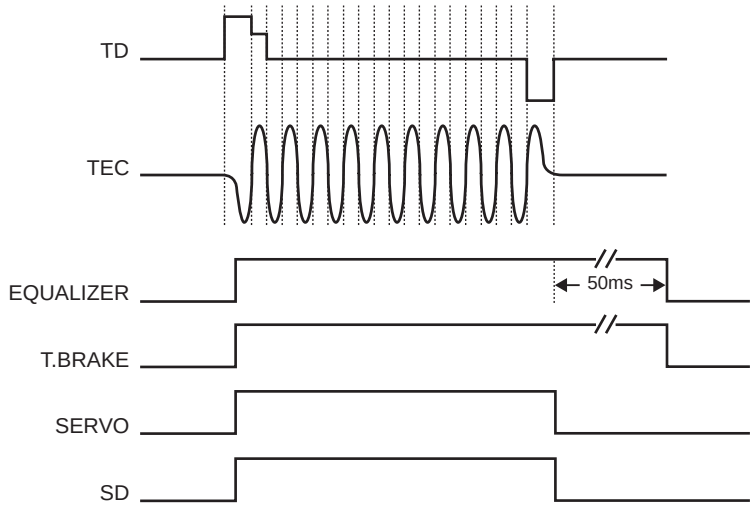
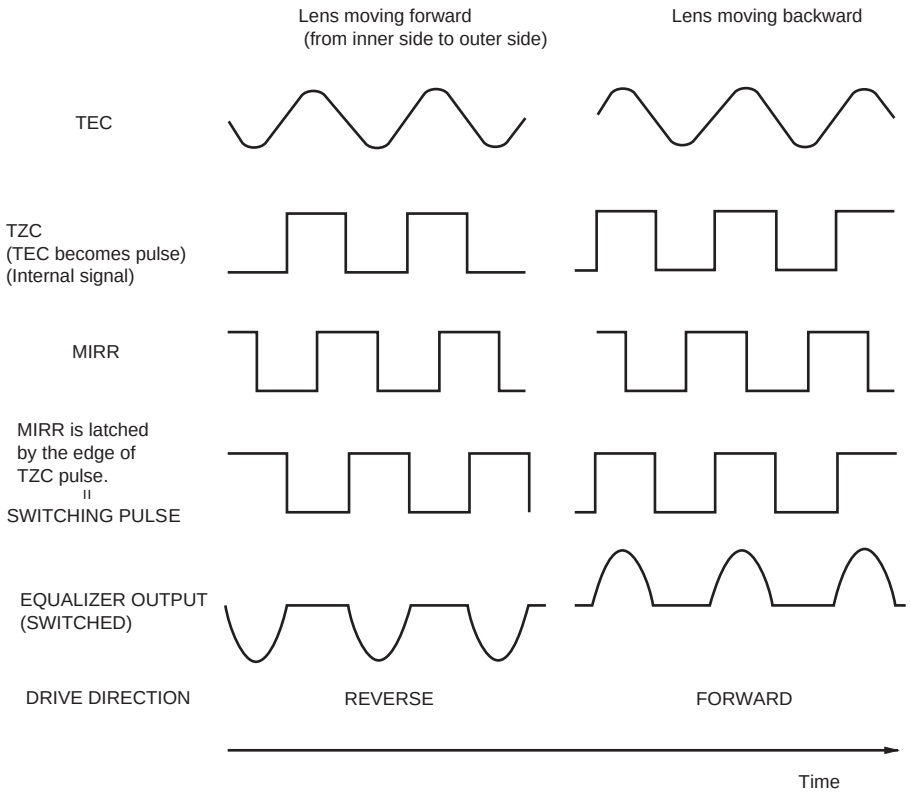


Fig.9-2 Multi-track jump(Speed control)

b) Brake circuit

Since lead-in of servo is weakened during set-up or track jump, stable lead-in to servo loop is performed, using a brake circuit. The brake circuit detects the direction of a lens and outputs only the drive signal of the cross direction toward its operation to slow the lens speed down and performs stable lead-in to the tracking servo. In addition, the direction for sliding a track is determined by TEC signal, MIRR signal and its phase relation.



(NOTES) The phase of equalizer output is written as the same as TEC phase.

Fig.10 Tracking brake circuit

3) Carriage servo system

The carriage servo is input the output from low frequency number composite of tracking equalizer (position information of lens) to carriage equalizer, and after acquiring fixed gain, it outputs drive signal from LSI. The signal is impressed to carriage motor via driver IC.
To be more precise, since it is necessary to move the entire pick-up to forward direction when lens off-set during playing reaches to certain level, the gain of equalizer is set to generate higher voltage than start-up voltage of carriage motor at that time. In addition, actual operation is set to fix a certain threshold for equalizer output inside servo LSI, and to output the drive voltage only when the level of equalizer output is over that fixed level. In that way, power consumption is reduced. Moreover, according to decentering of a disc, the level of equalizer output voltage may cross threshold level several times before the entire pick-up starts to move. At that time, output waveform of drive voltage from LSI is pulse state.

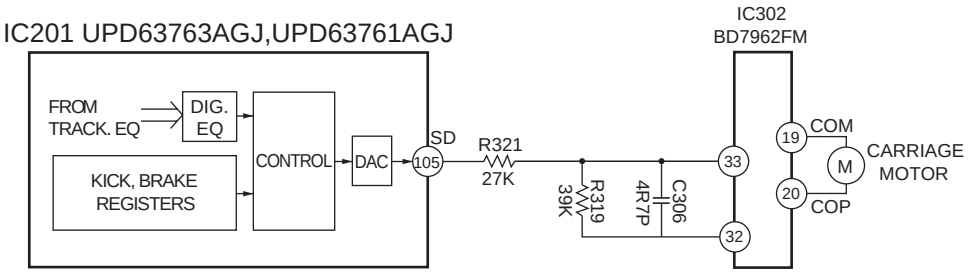


Fig.11 Carriage servo block diagramFig 16: Carriage servo block diagram

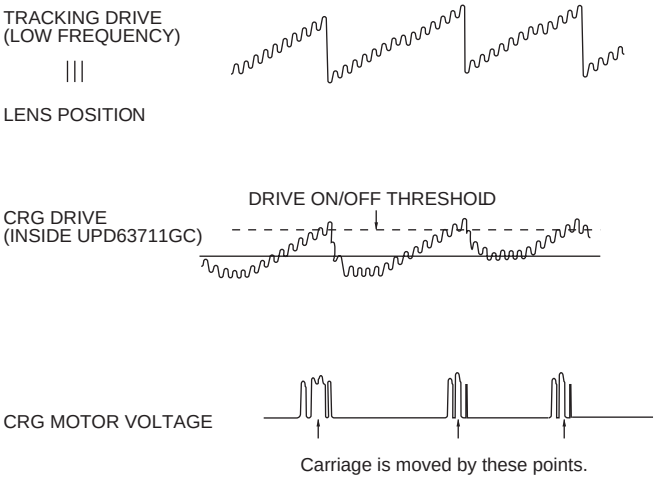


Fig.12 Carriage signal waveform

4) Spindle servo system

There are following modes for spindle servo.

① Simple FG servo:
It is for maintaining the rotation of a disc to be in closer condition of regular rotation.
The microcomputer monitors FG signal output pulse according to the rotation of a spindle motor and controls the drive voltage of the spindle motor.
This is used in following situation.
a) At set-up time, it is used during transition from power ON with focus-close to rough servo.
b) It is used until recovering from out-of-focus during playing.

② Adaptation servo:
It is CLV servo mode of normal operation.
It takes a sample of WFCK/16 at EFM demodulation block to check whether frame synchronized signal and internal frame counter output agree, then generates signal showing "agree" or "disagree". When this signal shows "disagree" 8 times continuously, it is considered as asynchronous and otherwise, it is considered as synchronous. This adaptation servo selects lead-in servo in asynchronous, and regular servo in synchronous automatically.

③ Brake:
It is a mode for stopping a spindle motor. The microcomputer monitors FG pulse and applies the brake fully to certain interval (speed) and decreases the brake level and stops it when the speed is under that.

④ Stop:
It is a mode used at the time of POWER ON and eject.
Both ends of voltage of a spindle motor is 0V at this time.

⑤ Rough servo:
It is a mode used at the time of carriage feed (carriage move of long search, etc.).
It inputs which one of H level or L level to a spindle equalizer after calculating line speed according to EFM waveform.
Also this mode is to confirm the grating in test mode.

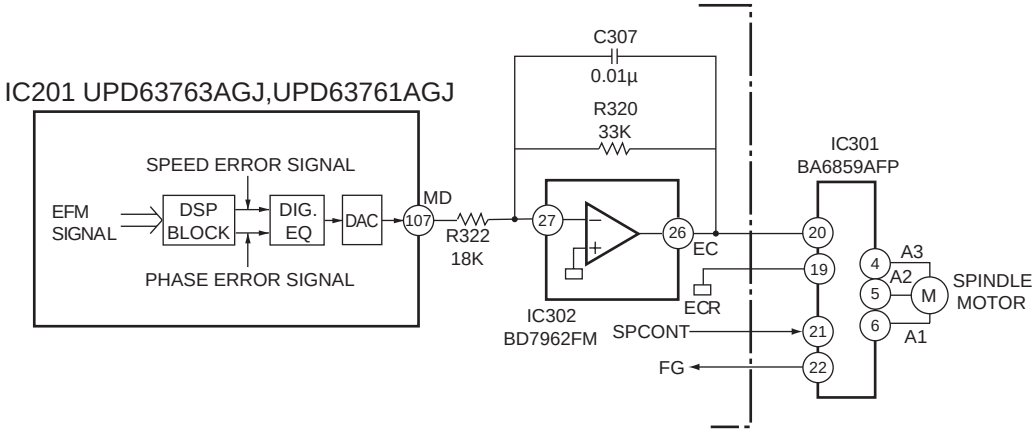


Fig.13 Spindle servo block diagram

1.3 AUTOMATIC ADJUSTMENT FUNCTION

In this system, all circuit adjustment is automatically operated inside CD-LSI.
All adjustment is performed every time of inserting disc or selecting CD mode by source key.
The contents about each automatic adjustment are in the following;

1) FZD cancellation setting
It makes focus-closing performed certainly. FE offset level at the time of POWER ON is read, and the reverse voltage of offset value is written into CRAM inside IC, then the offset is cancelled. In this way, FZD threshold level can be set to fixed value (+240mV) and one of focus-close conditions inside IC such as "FZD signal is latched to H" is certainly carried out.

2) TE, FE, RF offset automatic adjustment
With this adjustment, TE, FE, RF amp offset of preamp at the time of POWER ON are adjusted to each desired value with REFO reference.
(The desired value: TE, FE, RF) = (0, 0, -1) [V])
Adjustment steps are;
(1) The microcomputer reads each offset during LDOFF condition via servo LSI.
(2) The microcomputer calculates voltage to be corrected from read value in step (1), and substitutes the corrected value in the given place.

3) Tracking balance (T.BAL) automatic adjustment
With this adjustment, output difference between Ech and Fch is equalized by changing gain of LSI internal amp. Actually, TE waveform is adjusted to be vertical symmetry to REFO.
Adjustment steps are;
(1) After focus-close,
(2) Kicking a lens toward radial direction to generate TE waveform certainly.
(3) The microcomputer reads offset volume of TE signal calculated inside LSI at that time via servo LSI.
(4) The microcomputer detects offset volume as which one of 0, positive or negative.
If offset volume = 0, adjustment is finished.
If offset volume = positive or negative, change amp gain of Ech or Fch according to certain rule.

Then, repeat step 2) - 4) until reaching "offset volume = 0" or "limit number" and adjustment is finished.

4) FE bias automatic adjustment
With this adjustment, RFI level is maximized by making focus point during playing optimal. Adjustment is performed by utilizing phase difference between 3T level waveform of RF waveform and disturbance input of focus error. Since disturbance is input to focus loop, the adjustment is performed at the same timing as automatic gain control described later.
Adjustment steps are;
(1) Filling disturbance into focus loop by microcomputer commands (internal servo LSI)
(2) Detecting jiggle of 3T components in RF signal inside LSI.
(3) Processing relation between 3T components described above and disturbance inside LSI to find misalignment of focus and its direction.
(4) The microcomputer reads out the result found above by a command from servo LSI.
(5) The microcomputer calculates the required correction volume and substitutes the result into bias adjustment items inside servo LSI.
In addition, a series of adjustment steps is repeated several times (same as automatic gain control) to increase adjustment accuracy.

5) Focus, tracking AGC
With this adjustment, servo loop gain of focus and tracking is adjusted automatically.
Adjustment steps are;
(1) Filling disturbance into servo loop.
(2) Acquiring G1, G2 signal by extracting error signal at the time of filling disturbance (FE, TE) via B.P.F.
(3) Reading signal of the microcomputer, G1 and G2 via servo LSI.
(4) The microcomputer calculates the required correction volume and performs loop gain adjustment inside servo LSI.
In addition, a series of adjustment steps is repeated several times to increase adjustment accuracy.

6) RF level automatic adjustment (RFAGC)

This adjustment is performed in order to adjust variation of RF signal (RFO) level to fixed value and to realize reliable signal transmission. The adjustment is performed with changing amp gain between RFI and RFO.

Adjustment steps

(1) The microcomputer reads out output from RF level detect circuit inside servo LSI by a command.
(2) The microcomputer calculates desired RFO level of amp gain volume from read value.
(3) The microcomputer sends an appropriate command to servo LSI to reach to the gain volume of (2).
This adjustment is performed at the following timing,
- During set-up, only focus-close is finished
- At the point of set-up completion (just before playing)
- During playing, after recovering from out-of-focus

7) Adjustment of gain of preamp stage

If there is lens dirt, or reflected light of a disc is notably small during CD-RW replaying, gain of entire RFAMP(FE, TE, RF amp) should be +6dB, +12dB according to the situation.

Adjustment steps

When reflected light of a disc is notably small during set-up, the entire RFAMP should be +6dB, +12dB. In addition, when changing gain, perform again the set-up procedure from the start. When it is considered that "the entire gain of RFAMP is always played at +6dB", perform the set-up at +6dB in advance from the next time.
See the figure below.

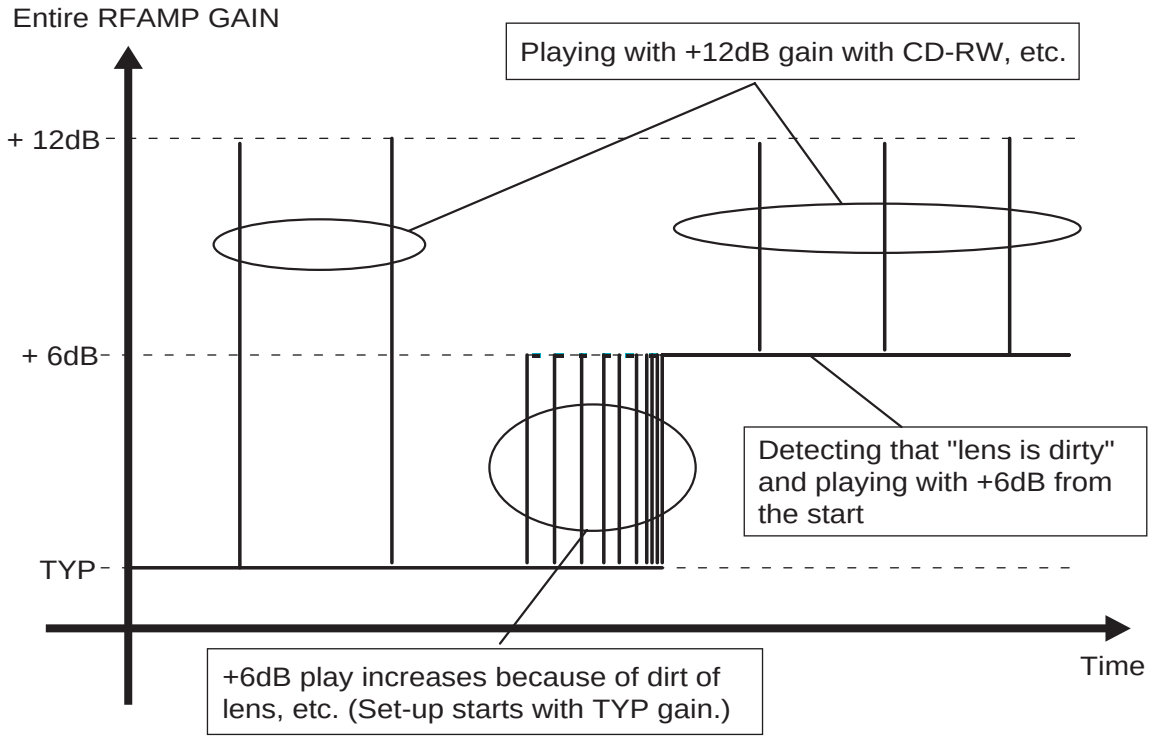

Entire RFAMP GAIN
Playing with +12dB gain with CD-RW, etc.
+ 12dB
+ 6dB
TYP
Detecting that "lens is dirty" and playing with +6dB from the start
Time
+6dB play increases because of dirt of lens, etc. (Set-up starts with TYP gain.)

Fig.14 Conceptual diagram of gain of preamp stage

8) Adjustment initial value
All adjustment is performed based on the latest adjusted value that is considered as initial value unless the power of the microcomputer is off (back up is stopped). (There is an exception, though.) If back up is stopped, automatic adjustment is done by the initial value, not by the latest adjusted value.

9) Coefficient indication of adjustment result
It is possible to display and check certain automatic adjusted (FE, RF offset, FZD cancel, FT, and RFAGC) in test mode.
Coefficient indication of each automatic adjustment is showed below:

(1) FE, RF offset, FZD cancel
Reference value = 32 (Coefficient 32 means no adjustment was required.)
Indication is every approx. 40mV.
Example: FZD cancel coefficient = 35
35-32=3X40mV=120mV
Since corrected volume is about +120mV, FE offset before correction is -120mV.

(2) F.T gain adjustment
Reference value: focus, tracking = 20
Coefficient indication / reference value express adjusted volume.
Example: AGC coefficient = 40
40 / 20 = 2 times (+ 6dB) adjustment was performed. (It means "since it was originally 1/2 time of loop gain, the entire gain was doubled to make it to the desired value.")

(3) RF level adjustment (RFAGC)
Reference value = 8
Coefficient = 9 - 15 .....Increasing RF level
(Increasing gain)
Coefficient = 7 - 0 .....Decreasing RF level
(Decreasing gain)
If a coefficient moves 1, 0.7 - 1dB of gain changes accordingly.
Maximum gain = when a coefficient is 15, TYP +6.5dB
Minimum gain = when a coefficient is 0, TYP -6.0dB

1.4 POWER SUPPLY SECTION

VD 8V: Power supply for mechanism servo. It supplies to driver directly and also generates 3.3V and 1.5V (compression model) with a regulator in the unit.

VDD 5V: Power supply for microcomputer. If back up (+B) is connected, it is always supplied from a product.

GND: There are 3 systems (servo system, digital system and reference GND of audio described in the next section). They are divided in the core unit.

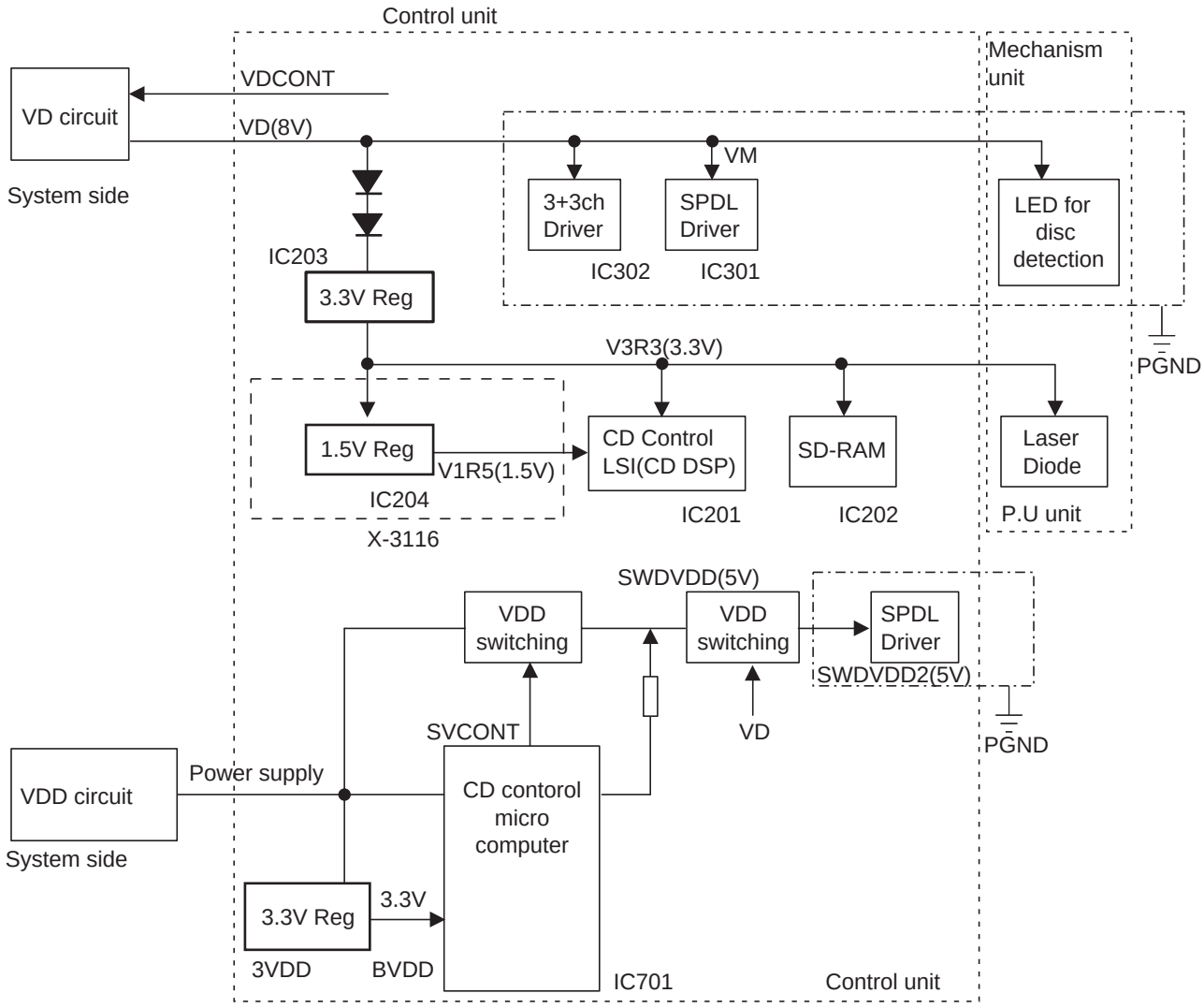
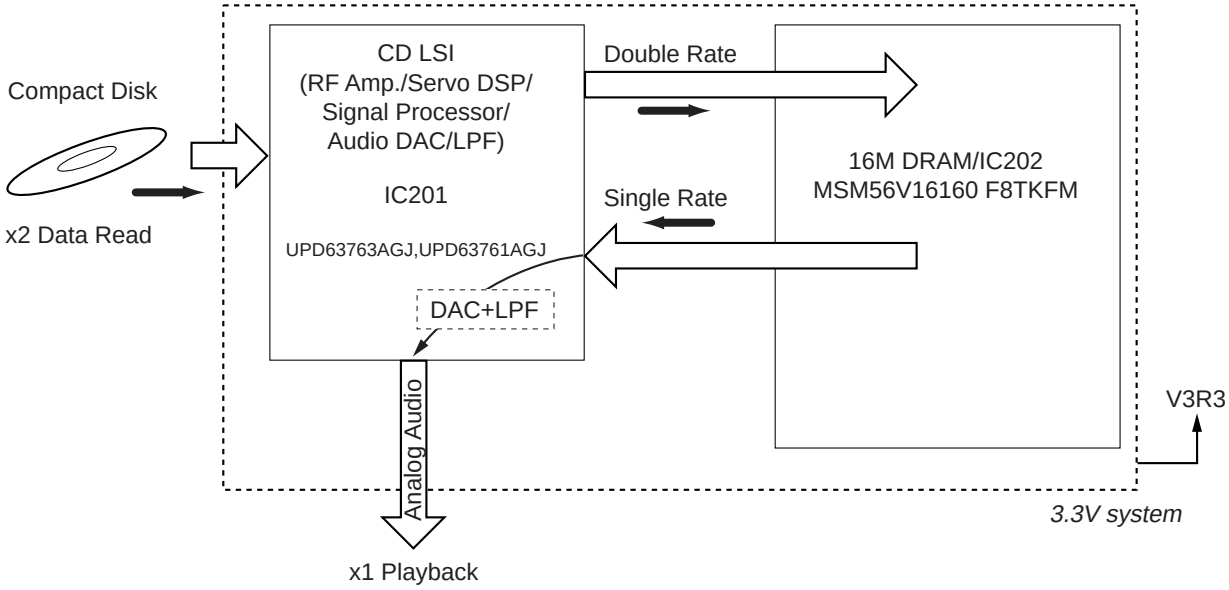


Fig.15 Power supply section

1.5 STS CIRCUIT EXPLANATION

Sure Track System circuit pools music data read from CD, and when pick up is out of the track by some reasons, it outputs data from memory during recovery and prevents sound break effectively.



Operation theory

STS circuit is controlled by uPD63761AGJ (IC201) having a built-in shockproof memory controller. Signal read from CD with double rate is demodulated to data in CDLSI, and the built-in memory controller memorizes SDRAM audio data, then reads out SDRAM data with single rate based on the output clock from C33M port of the LSI (33.86MHz) as reference clock, and outputs DAC.
Since the writing speed is faster than the reading speed from SDRAM, the memory may overflow soon. However, if it overflows, reading is stopped temporarily and to be in pause. Reading data from SDRAM continues and when empty space is available, writing data is restarted. (Remaining RAM can be monitored by "RAM0, RAM1 and RAM2" terminal.)
By repeating this process, SDRAM is always utilized effectively and data during 12 seconds (at the time of CD-DA) can be stored. For example, pick up is out of the track because of vibration, sound break is avoided if recovery is performed within 12 seconds by using memory.

1.6 MECHANISM CONTROL

● Overview

The combination of load/eject operation, camgear motor (operation mode) operation, elevation operation and clamp operation enables the operation as changer mechanism module.

1) Loading system

Disc position is detected with 3 switches attached to mechanism unit, photo, and LED, and load/eject is performed by driving an E/L motor. *E/L is abbreviation of Elevation/Loading. (G3 mechanism shares a motor, unlike G2 mechanism.)

1.1) Detect system

The 3 switches, photo and LED operate load start/load end, disc form detection and watching disc eject.

1.2) Drive system

Controlling an E/L motor by the control unit enables the following function:

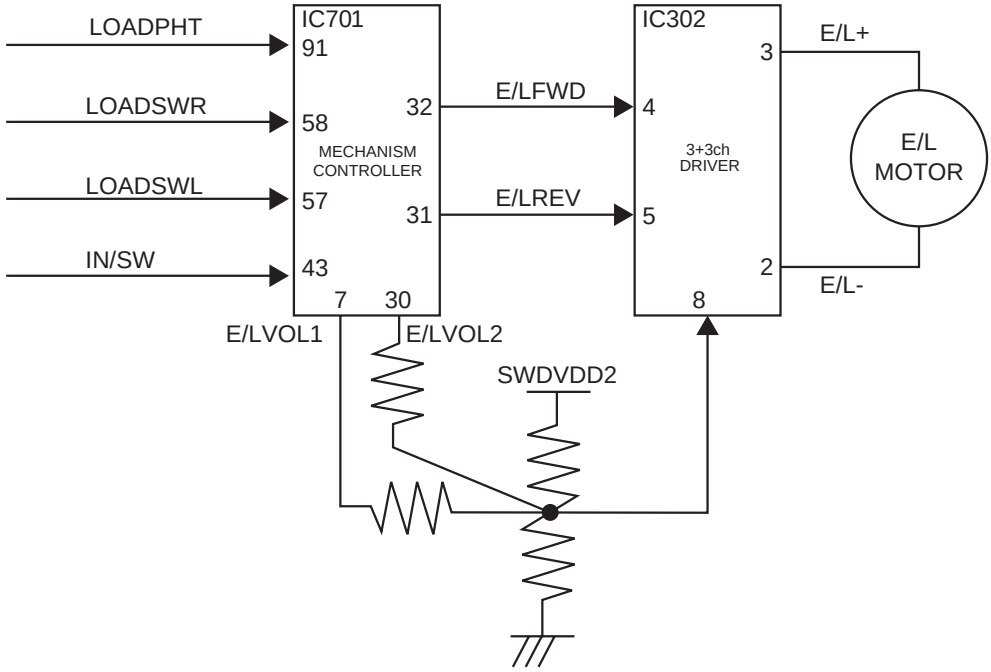
Loading of disc
Ejecting of disc

a) Drive system

It controls drive direction by output E/LFWD, E/LREV from the microcomputer (IC701), and 3 values of drive voltage by Hi-Z/L of ELVVOL1,ELVVOL2.

At the time of loading E/L+<E/L- ; (E/LFWD; L, E/LREV; H)
At the time of ejecting E/L+>E/L- ; (E/LFWD; H, E/LREV; L)

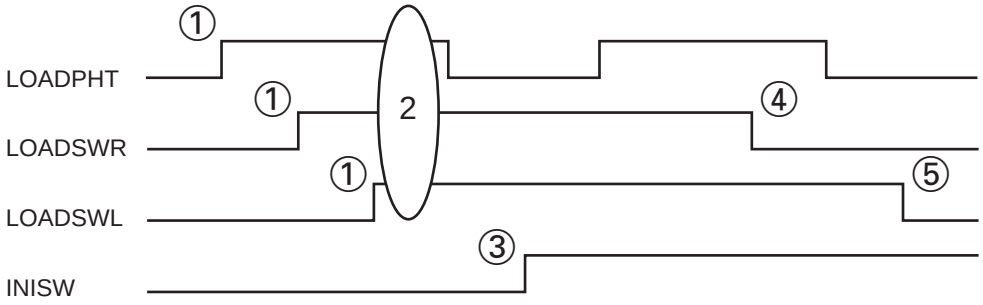
Drive voltage (E/LVOL1=Hi-Z, E/LVOL2=Hi-Z) ; 8V
Drive voltage (E/LVOL1=L, E/LVOL2=Hi-Z) ; 7V
Drive voltage (E/LVOL1=Hi-Z, E/LVOL2=L) ; 4.4V



b) Drive sequence

At the time of loading:

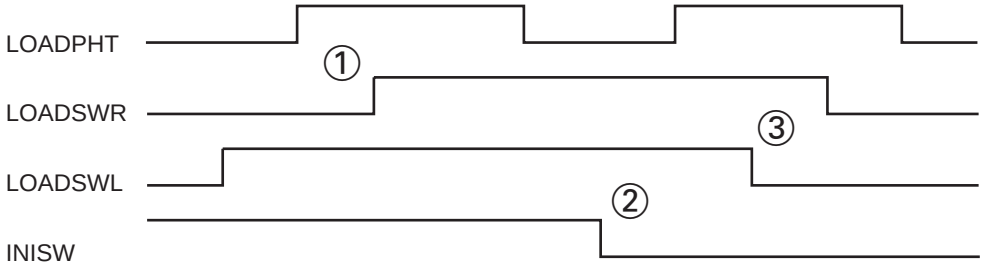
① One of LOADPHT, LOADSWR, LOADSWL starts driving with H. ② All of LOADPHT, LOADSWR, LOADSWL detect H at the same time. ③ Detecting H of INISW. ④ Detecting L of LOADSWR. ⑤ Detecting L of LOADSWL and stopping E/L motor.



At the time of ejecting:

① Starting driving H of LOADSWR. ② Detecting L of INISW.

③ Detecting L of LOADSWL and after reverse brake (16ms), stopping E/L monitor.

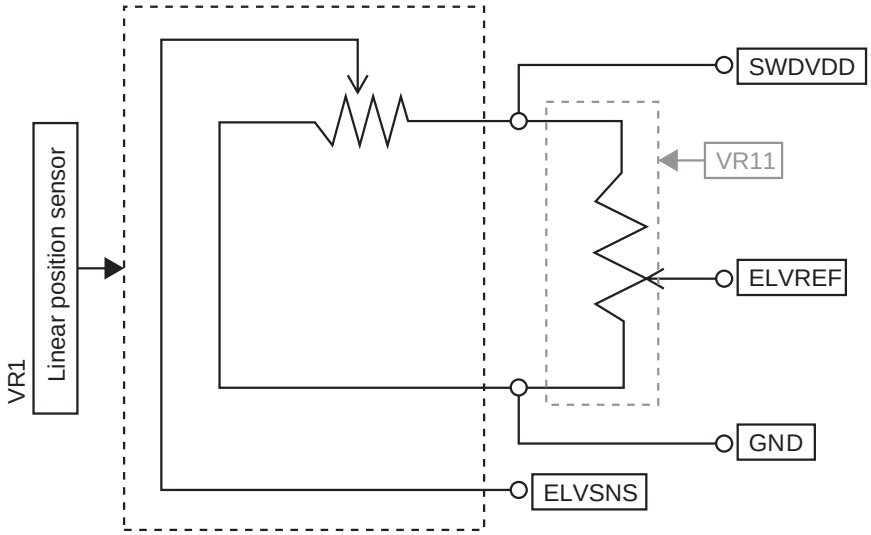


2) Elevation system

2.1) Detect system

It uses a linear position sensor (VR1), converts stage chassis level to voltage value and captures it by a microcomputer A/D to detect absolute position.

Detect circuit



2.2) Drive system

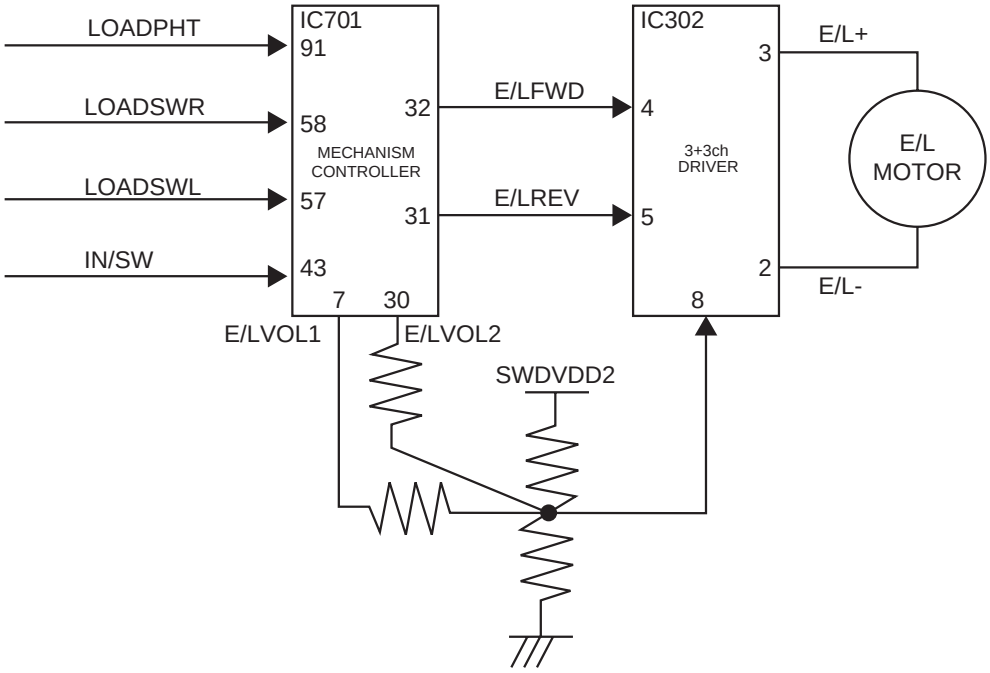
Controlling an E/L motor by the control unit enables the following function.

Elevation function

a) Drive circuit

t controls drive direction by output E/LFWD, E/LREV from the microcomputer (IC701), and 3 values of drive voltage by Hi-Z/L of ELVVOL1,ELVVOL2.

Driving upper direction E/L+>E/L- , (E/LFWD; H, E/LREV; L)
Driving lower direction E/L+<E/L- , (E/LFWD; L, E/LREV; H)
Drive voltage CAMVOL=Hi-Z, 8VCAMVOL=L, 7V
CAMVOL=L, 7V



b) Drive sequence

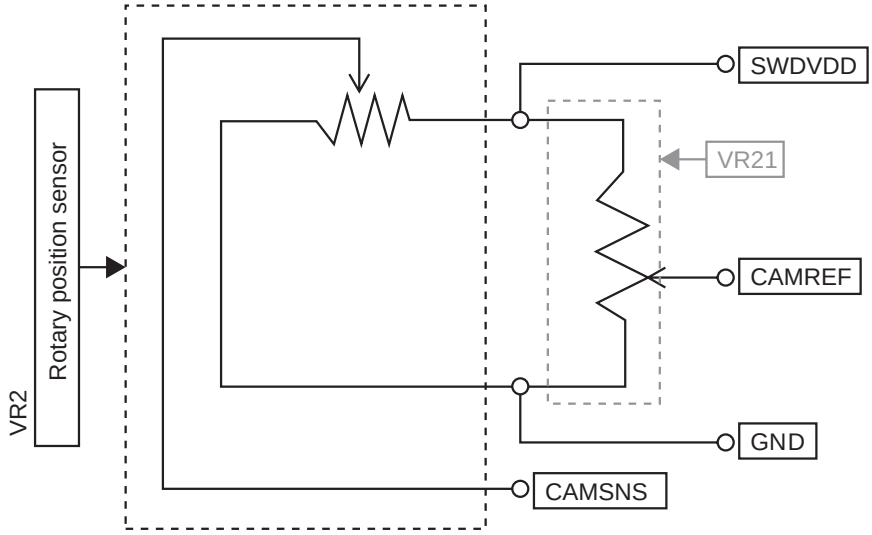
1 Driving continuously to the position of brake start.
2 Detecting of passing the position of brake start and starting short brake.
3 Starting of driving pulse to reach OK range. After confirmation of entering OK range, it is completed.

2)Camgear motor system

2.1) Detect system

It uses a rotary position sensor (VR2), converts a camgear rotation angle to voltage value and captures it by a microcomputer A/D to detect absolute position.

Detect circuit



2.2) Drive system

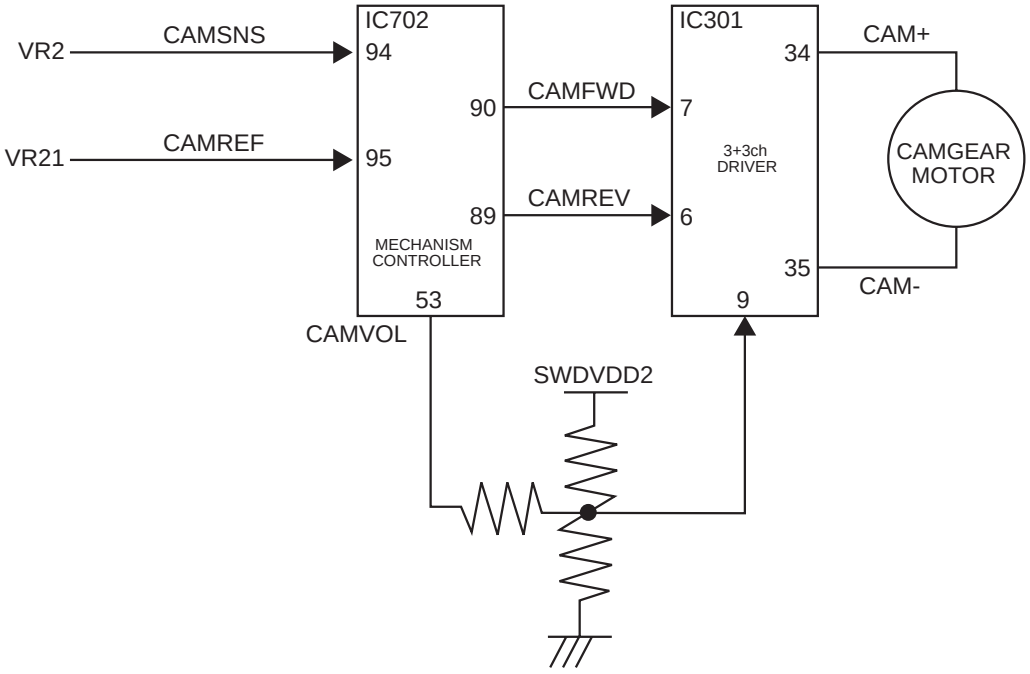
Controlling a cam gear motor by the control unit enables the following function:

- Open/close of shutter
- Open /close of tray tab
- Division of tray
- Rotation operation of CRG chassis (moving to the play position)
- Release of mechanism lock
- Drive of eject arm

a) Drive circuit

It controls drive direction by output CAMFWD and CAMREV from the microcomputer (IC701), and two values of drive voltage by Hi-Z/L of CAMVOL.

Driving CRG chassis to the outer direction (direction of EJECT position)
AM+>CAM-; (CAMFWD; H, CAMREV; L)
Driving CRG chassis to the inner direction (direction of PLAY position)
CAM+<CAM-; (CAMFWD; L, CAMREV; H)
Drive voltage CAMVOL=H; 8V
CAMVOL=L; 7V



b) Drive sequence

1 Driving continuously to the position of brake start.
2 Detecting of passing the position of brake start and starting short brake or reverse brake.
3 Starting of driving pulse to reach OK range. After confirmation of entering OK range, it is completed.

4) SPDL clamp system

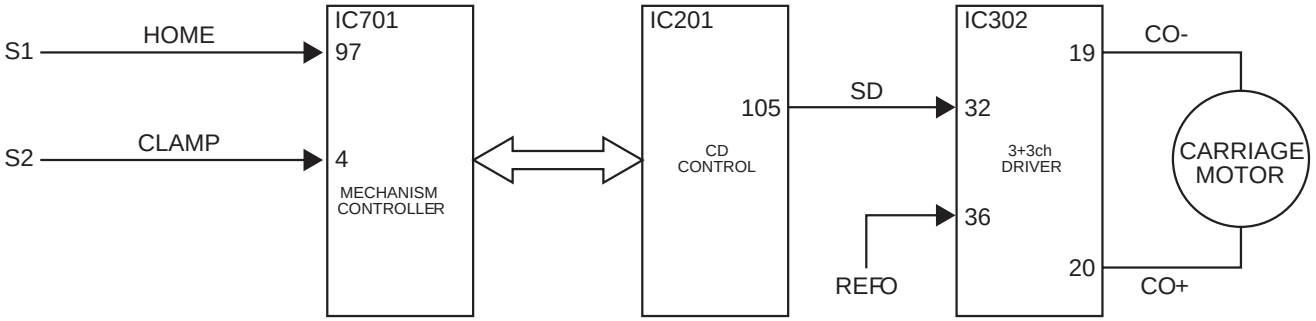
4.1) Detect system

It is composed of two switches such as HOME switch used in servo system (S1) and CLAMP switch (S2) for checking a shutter of the tab inside it.

4.2) Drive system

It operates a pickup unit to move to inner side from normal replay position and moves clamp mechanism of a DISC.

a) Drive circuit



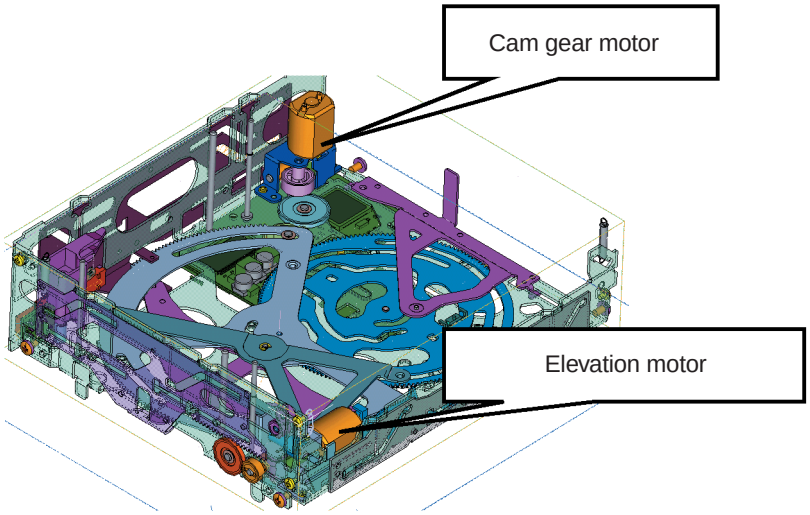
2. MECHANISM OVER VIEW

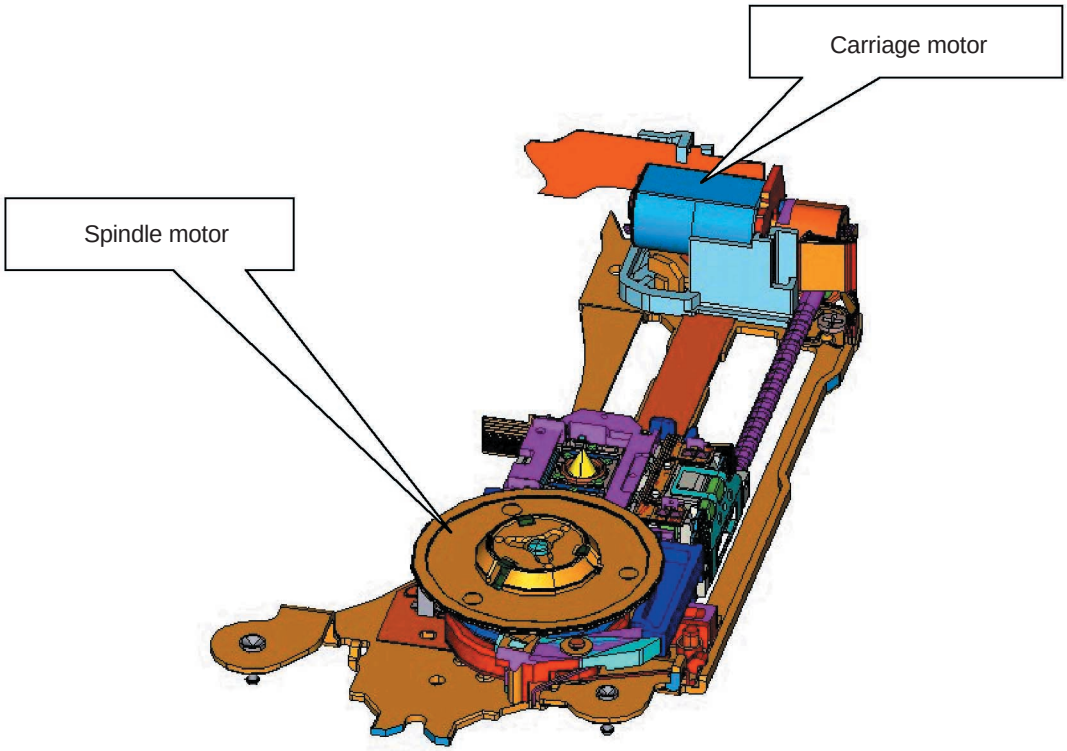
2.1 STRUCTURE OF MECHANISM AND OPERATION OF COMPONENTS

The mechanism consists of three blocks, i.e., a main chassis, which is the base of the entire mechanism, stage and tray. Various kinds of operations are performed according to how those blocks are positioned in relation to one another.
The stage block consists of CRG, stage and loading unit; and the loading unit moves up and down with the stage block. The stage block is joined to the main chassis section with a stair and link lever. Sliding the stair moves the entire stage block moves up and down. Moving the link lever allows the CRG to rotate to play a disc. The tray block consists of six trays. Similarly to the stage block, the tray block moves up and down as the stair slides.
To play the disc, the stage block moves toward the tray block at a location where the disc can be played. Then, the tray group is separated by the action of cylindrical cams, the CRG is inserted and the disc is clamped.
To load or eject the disc, the stage block moves to its lower end. Then, the tray block moves the target disc to a location where the disc can be loaded or ejected. The tray group is separated by the action of cylindrical cams. Then, the disc is loaded or ejected.

To carry out the aforementioned operation, the mechanism is provided with four motors. The operations listed in the table below are carried out by using the motors as a motive power.

Cam gear motor	Tray separation operation Carriage mechanism assembly rotation operation Eject arm operation Shutter opening/closing operation Tray claw opening/closing operation
Elevation motor	Elevation operation Loading/ejection rollers rotation operation
Carriage motor	Search operation
Spindle motor	Disc clamp claw opening/closing operation Disc rotation operation



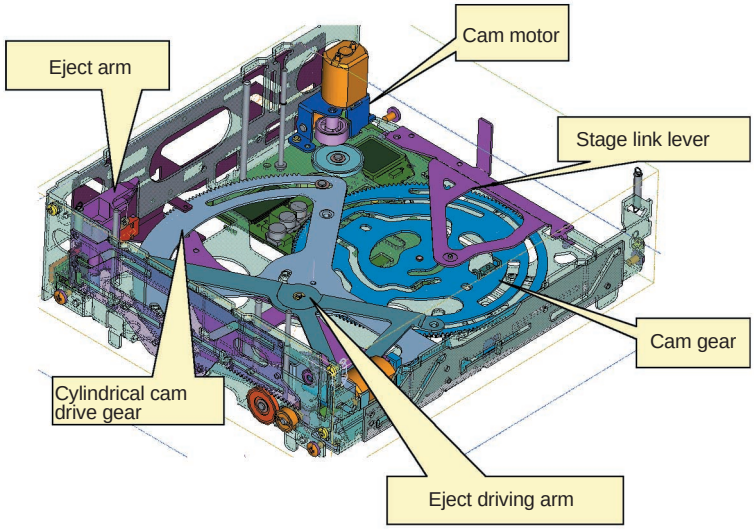


The operations carried out using the motors as a motive power are described below.

2.2 CAM GEAR MOTOR (OPERATION OF THE CAM)

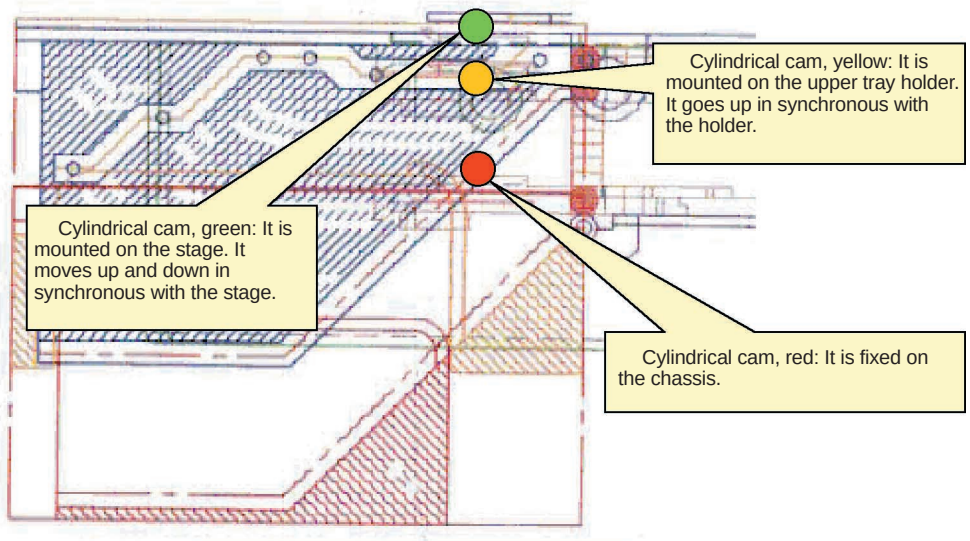
The following five operations are carried out by using the rotary motions of the cam gear motor as a motive power.

a.Tray separation operation
b.Tray claw opening/closing operation
c.Carriage mechanism assembly rotation operation
d.Eject arm operation
e.Shutter opening/closing operation



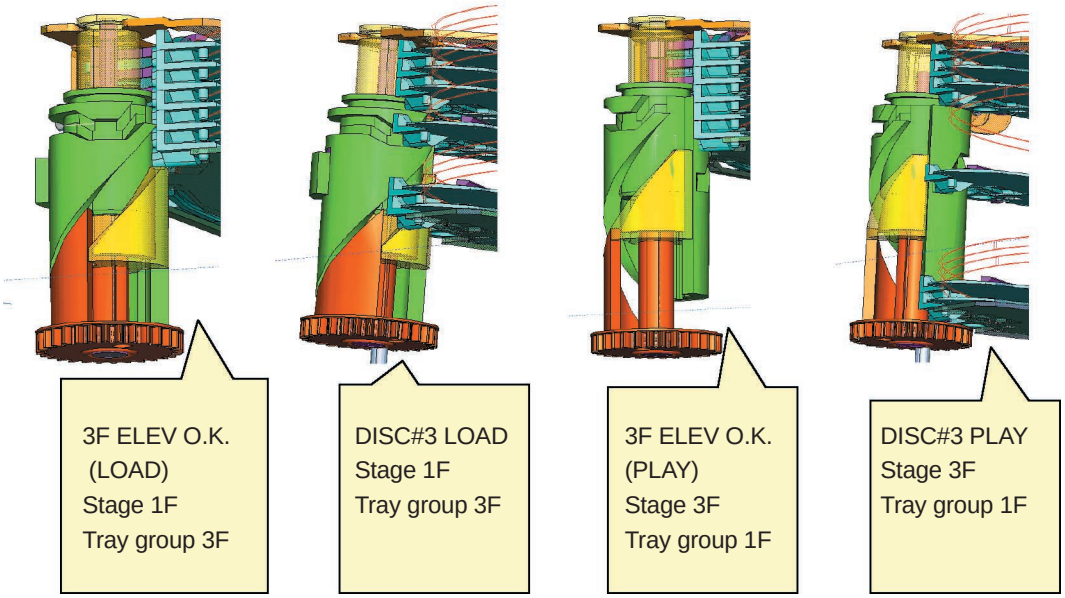
a.Tray separation operation

The rotary motion of the cam gear motor is transferred to the cylindrical cams by way of its cam. The tray is separated by rotations of the cylindrical cams. This makes a space into which the CRG is inserted when playing the disc. The mechanism of the cylindrical cams to separate the tray is as shown below.


Cylindrical cam, yellow: It is mounted on the upper tray holder. It goes up in synchronous with the holder.
Cylindrical cam, green: It is mounted on the stage. It moves up and down in synchronous with the stage.
Cylindrical cam, red: It is fixed on the chassis.

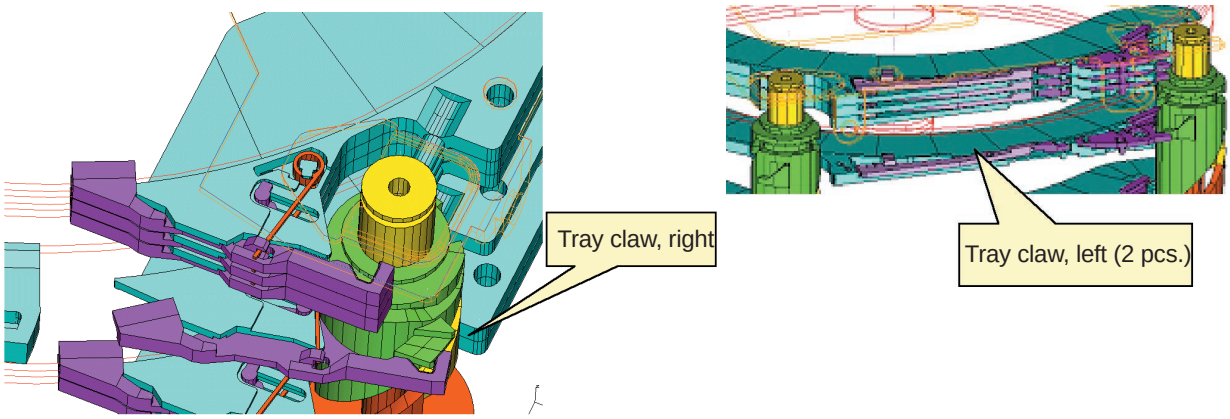
Cylindrical cam, green: Used to select a target tray
Cylindrical cam, yellow: Used to support the tray at the time of loading a disc
Cylindrical cam, red: Used to support the tray at the time of playing a disc

In addition, the appearance of trays being separated at the time of loading or playing disc #3 is shown below as an example.



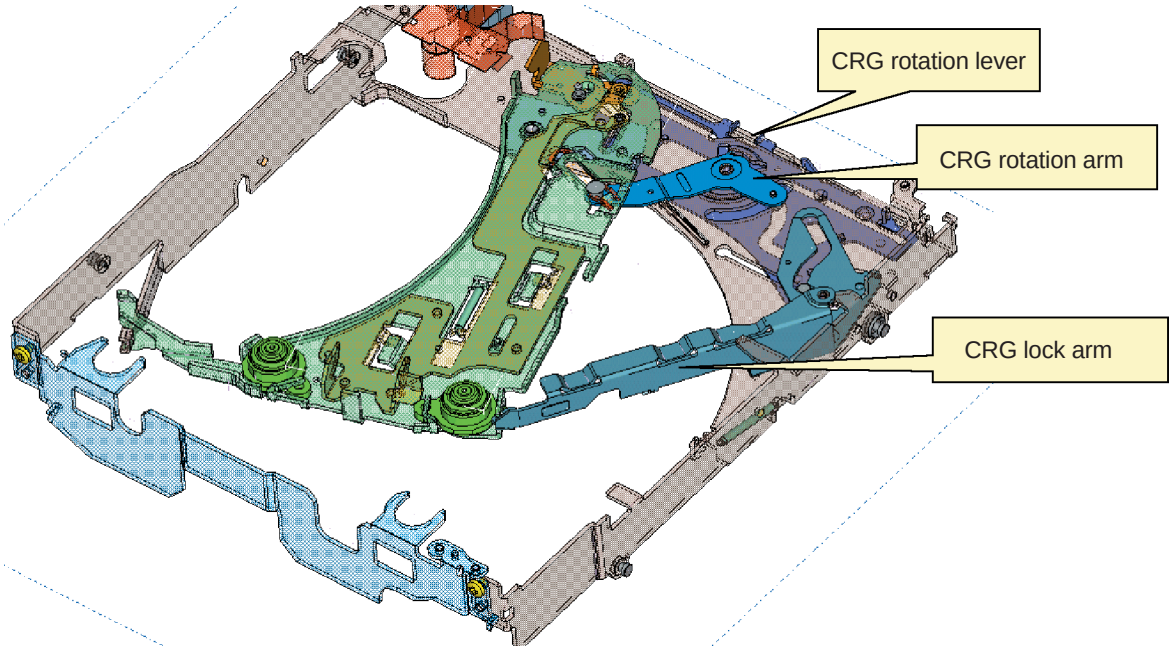
b.Tray claw opening/closing operation

To prevent a disc from dropping, each tray is provided with three claws for clamping the disc. When the cylindrical cams rotate, the tray is separated and tray claws are simultaneously opened/closed



c.Carriage mechanism assembly rotation operation

D stage link lever and CRG rotating lever are in mesh with each other. The CRG block rotates to travel to the disc playing position in synchronous with the stage link lever movements. The CRG block is fixed with the CRG lock arm and other components at the disc playing position.

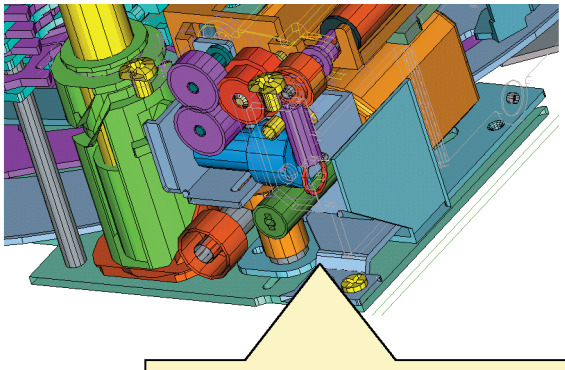


d.Eject arm operation

At the time of ejecting a disc, the eject arm is rotated by the force transferred from the eject driving arm to push the disc out.

e.Shutter opening/closing operation

ELEV 2 gear is slid by the force transferred from the eject driving arm. At the same time, the shutter, which protects the disc insertion slot engaged with the ELEV 2 gear unit, opens/closes.



ELEV 2 gear unit :
It slides by the force transferred from the eject driving arm.

2.3 ELEVATION MOTOR

The following two operations are carried out using rotations of the elevation motor as a motive power.

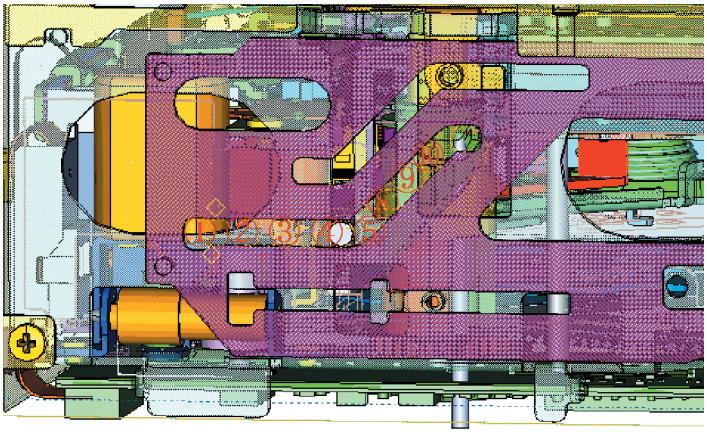
a.Elevation operation
b.Load/eject roller rotation

a.Elevation operation

Where the ELEV O.K. state, the stair is slid by rotations of the elevation motor. The stair is in mesh with the tray block and stage block. Therefore, the tray block and stage block move up and down in synchronous with the stair sliding.

The tray block and stage block change their positions among the following 11 ones according to a change in the stair position. The stair position is detected by the linear position sensor.

Stair position	Stage block	Tray block
①	1F	6F
②	1F	5F
③	1F	4F
④	1F	3F
⑤	1F	2F
⑥	1F	1F
⑦	2F	1F
⑧	3F	1F
⑨	4F	1F
⑩	5F	1F
⑪	6F	1F



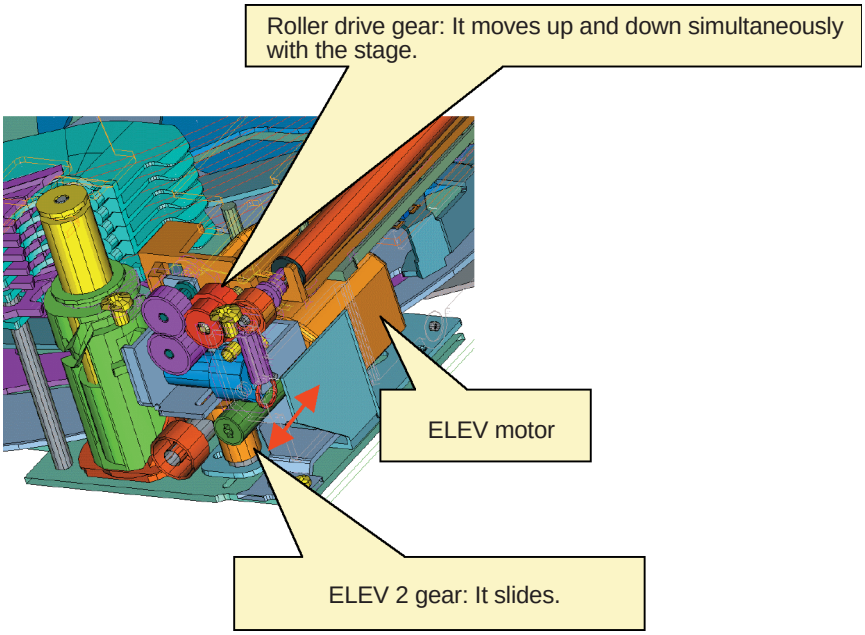
When the stair is located at one of positions ① to ⑥ the stage does not move up and down but stays at 1F. In this case, the tray group moves up and down to select a disc. To load or eject a disc, the stair should be located at one of those positions.

When the stair is located at one of positions ⑥ to ⑪ the tray group does not move up and down but stays at 1F. In this case, the stage moves up and down to select a disc. To play a disc, the stair should be located at one of those positions.

a.Elevation operation

When the stage is on its lowest layer, the roller drive gear joins the row of gears of the elevation motor. As a result, the load/eject roller rotates as the elevation motor rotates. This draws/ejects a disc.

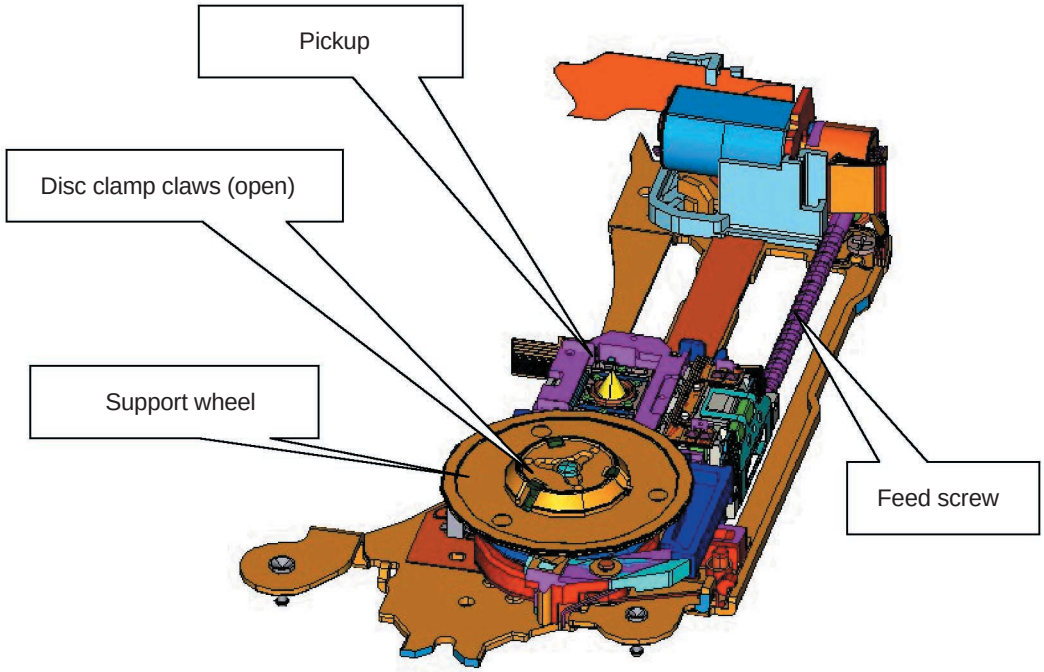
At the time of loading/ejecting a disc, the ELEV 2 gear slides to separate the row of gears which transfers the stair force. Therefore the stair does not move.



2.4 CARRIAGE MOTOR AND SPINDLE MOTOR

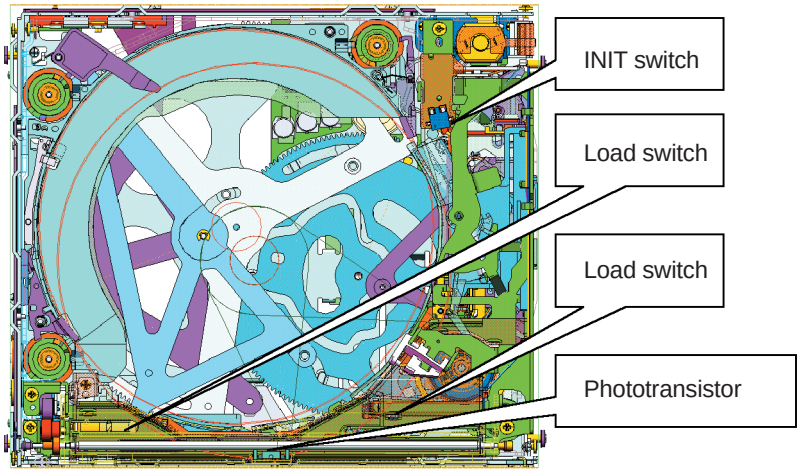
When playing a disc, the spindle motor works to rotate the disc. Search operation is carried out by reducing the rotating speed of the carriage motor with a worm and driving the feed screw.

At the time of playing, the disc is clamped with the three claws. The claws open to unclamp the disc when the support wheel mechanism shifts the pickup to the support wheel, or the claws close to clamp it for the search operation.

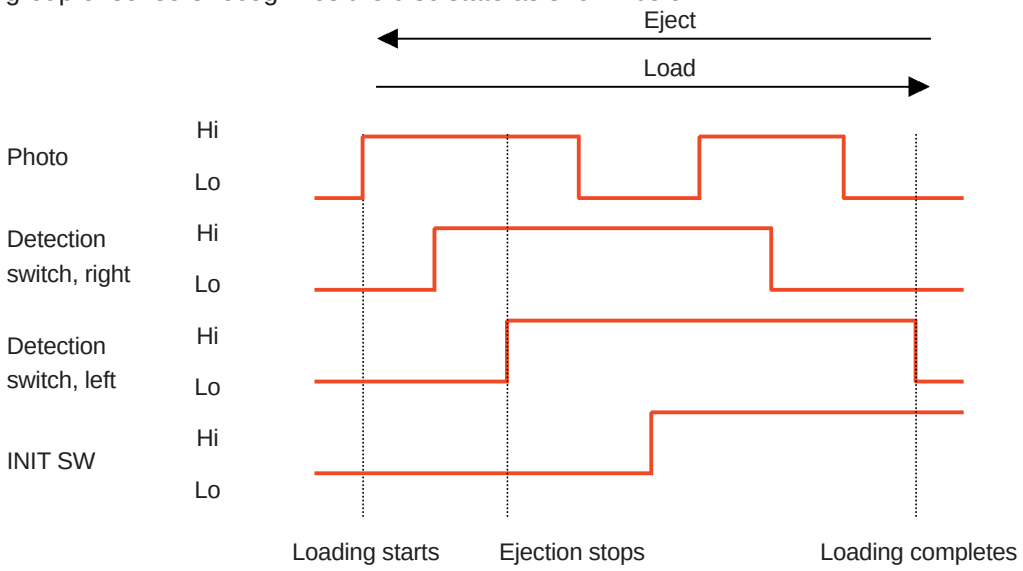


2.5 DETECTION OF A DISC BY SENSORS AT THE TIME LOADING

A disc is detected by a phototransistor, right and left load switches and INIT switch.
Phototransistor: Light emitted by the LED mounted on the underside of the roller is reflected by the lighting conductor on the shutter. When the light is shielded by the disc, the phototransistor is brought to its Hi status.
Load switch, right: It is mounted on the right side of the disc insertion slot. When the white resin lever is pressed to the right by the disc, the switch is brought to its Hi status.
Load switch, left: It is mounted on the left side of the disc insertion slot. When the white resin lever is pressed to the left by the disc, the switch is brought to its Hi status.
INIT switch: It is mounted at the right back of the stage. When the resin arm moves from its home position, the switch is brought to its Hi status.



The group of sensors recognizes the disc state as shown below.



2.6 OPERATIONS OF THE MECHANISM

The following operations are described below based on the explanation of a series of combined operations of the elements given above.

Initial operation of the mechanism
Loading operation
Ejection operation
Play operation

2.5.1 Initial operation of the mechanism

When the power is turned on, the mechanism starts initialization. It checks all trays starting from #6 for the presence of discs. The mechanism recognizes the tray(s) which currently has a disc.

2.5.2 Loading operation

Operation sequence from the ELEV O.K. state to the loading of a disc is carried out as described below:

① Tray into which a disc is to be ejected is selected by moving the tray group up and down by the elevation operation.
② Tray separation and shutter opening actions are taken simultaneously by the cam operation.
③ When the user inserts a disc into the selected tray, the phototransistor detects the inserted disc.
④ The disc is drawn inside by rotary motions of the roller.
⑤ The disc drawn into the predetermined position is detected.

2.5.3 Ejection operation

Operation sequence from the ELEV O.K. state to the ejection of a disc is carried out as described below:

① Tray from which a disc is to be inserted is selected by moving the tray group up and down by the elevation operation. The tray from which the disc is to be ejected moves to the disc insertion slot.
② Tray separation and shutter opening actions are taken through the cam operation. Then, the eject arm actuates to push the disc forward. At the same time, the roller starts rotating.
③ The disc is ejected by rotary motions of the roller.
④ It is detected that the user draws out the disc from the slot.
⑤ The steps ① and ② are carried out in reverse order by the cam operation. This closes the shutter.

2.5.4 Play operation

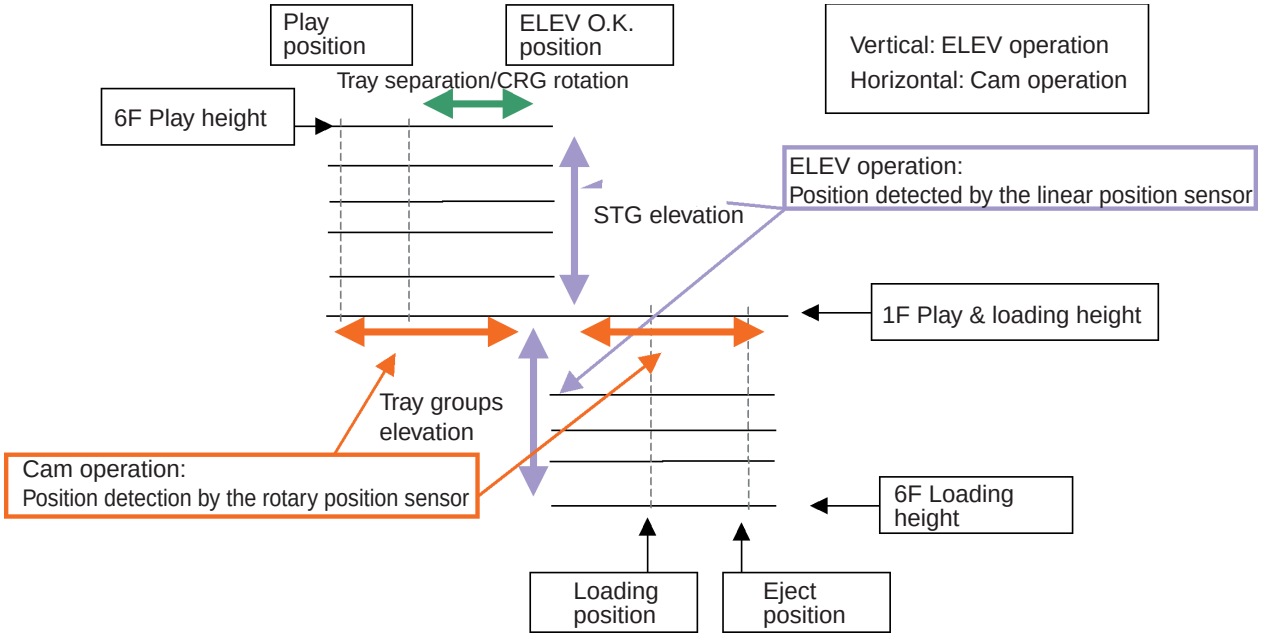
Operation sequence from the ELEV O.K. state to the play state is carried out as described below:

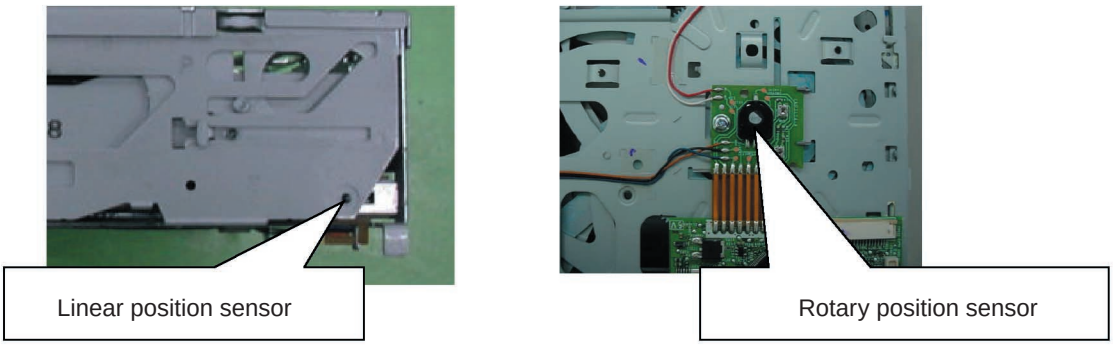
① The stage moves to the position of the tray which has the disc to be played by the ELEV operation.
② Tray separation and CRG rotation actions are taken by the cam operation.
③ The disc is clamped.

The aforementioned operation sequence is reversed to shift from the play state to the ELEV O.K. state.

Disc changing is carried out by shifting from the current play state to the ELEV O.K. state once, then shifting to the next play state. For example, to change the disc 1 to disc 6, the disc 1 play status is shifted to the ELEV O.K. status first, then the ELEV O.K. state is shifted to the disc 6 play state.

The mechanism state transition diagram is given below. Transition of the state of stage and tray group by the elevation operation is presented in vertical direction of the diagram. Transition of the state of tray separation and CRG position by the cam operation is presented in horizontal direction of the diagram. As shown in the diagram, the position of tray group and stage at the time of loading and ejection is same with that at the time of play only in the case of the disc 1.

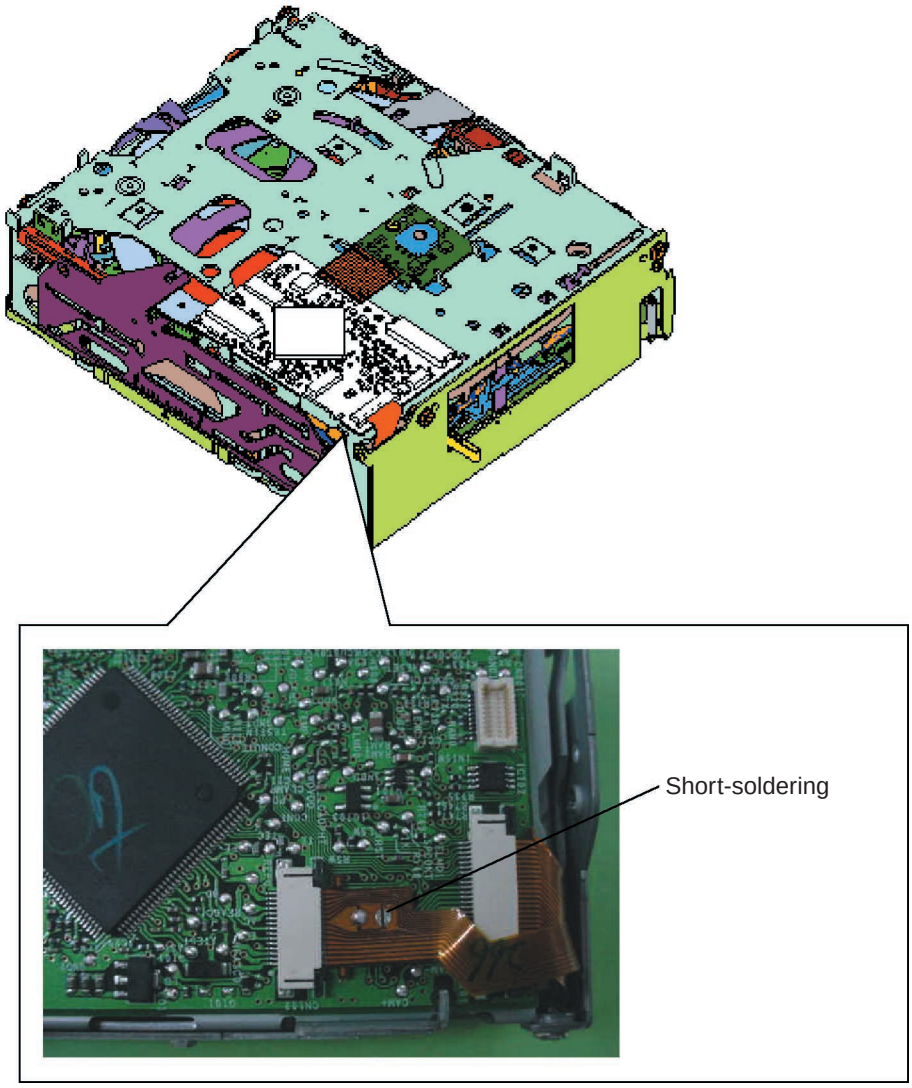




3. DISASSEMBLY

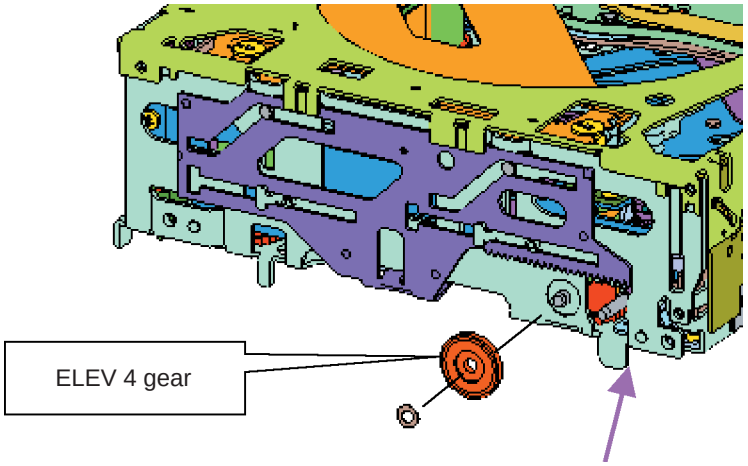
3.1 PREPARATION FOR REMOVAL

① Place the mechanism in the ELEV O.K. state.
② Eliminate static electricity with a wrist band, etc.
③ Carry out short-soldering. (There are two points to be short-soldered. It is enough to solder one of them.)
④ Slide the lock section of the connector to fix a flexible cable and remove a flexible cable. (2 points)



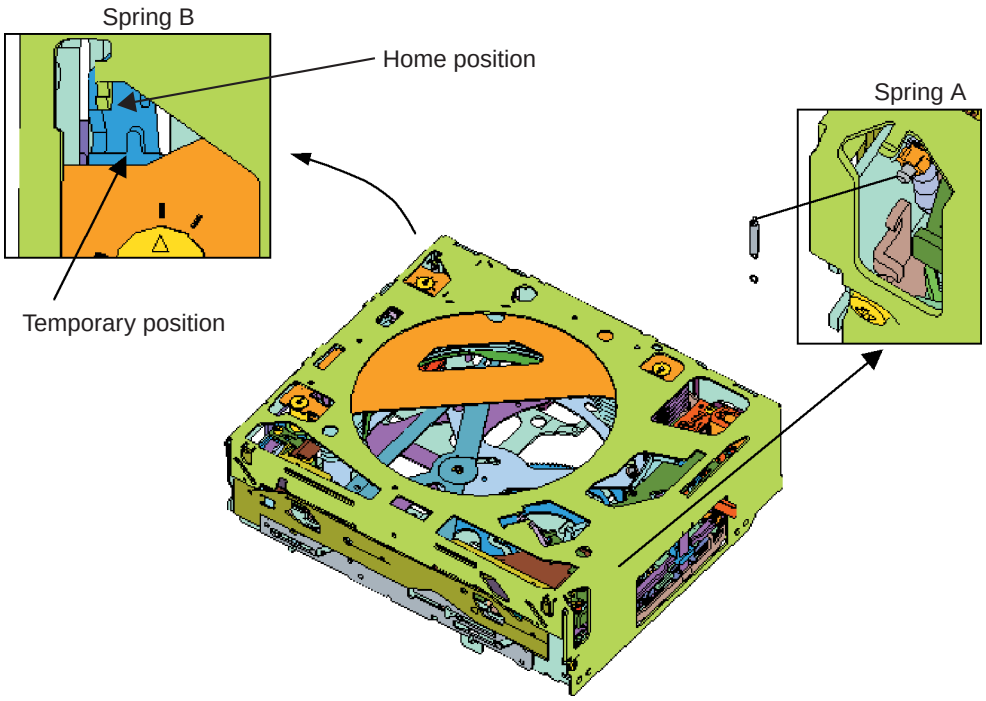
3.2 HOW TO REMOVE THE UPPER CASE

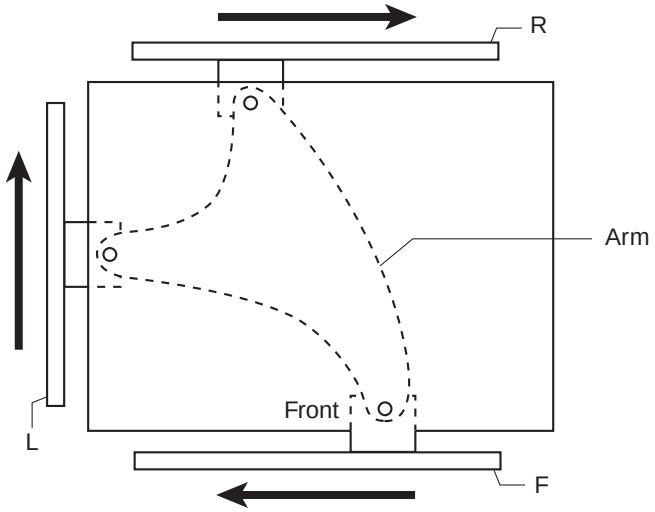
① Remove poly washer. Remove the ELEV 4 gear.
Once the ELEV 4 gear is removed, the stair can be slid as desired.



*In the illustration above, the ELEV 3 gear is removed. But the ELEV 3 gear is not required to be removed.

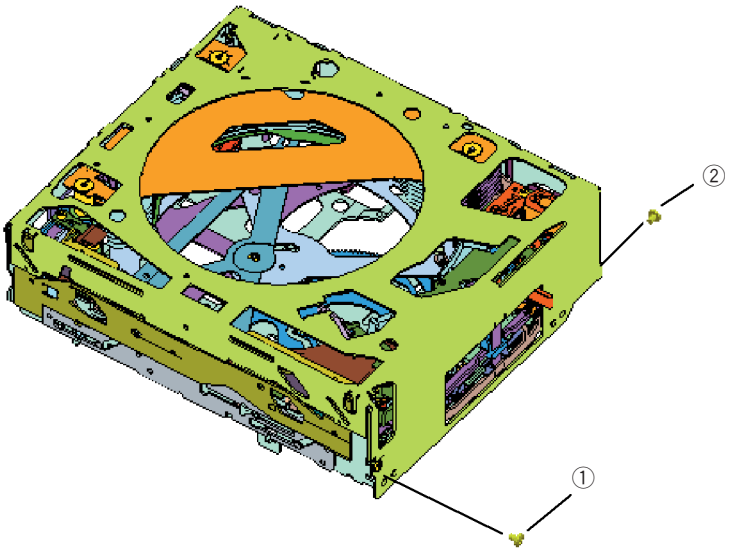
① Manually slide the stair (clockwise) to raise the stage block to the uppermost floor.
② Remove front right spring A.
③ Change the position of the back left spring B from the home position to a temporary position. (The hook at the temporary position is fixed on the stage. This means that the stage needs to be raised to the uppermost floor to enable easy re-positioning of the spring.)

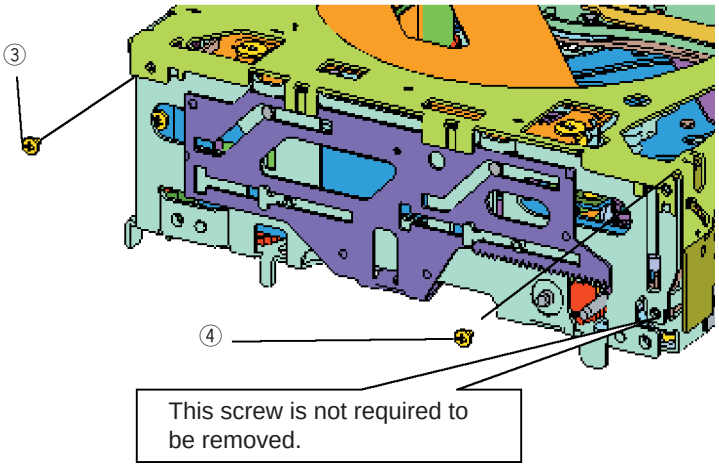


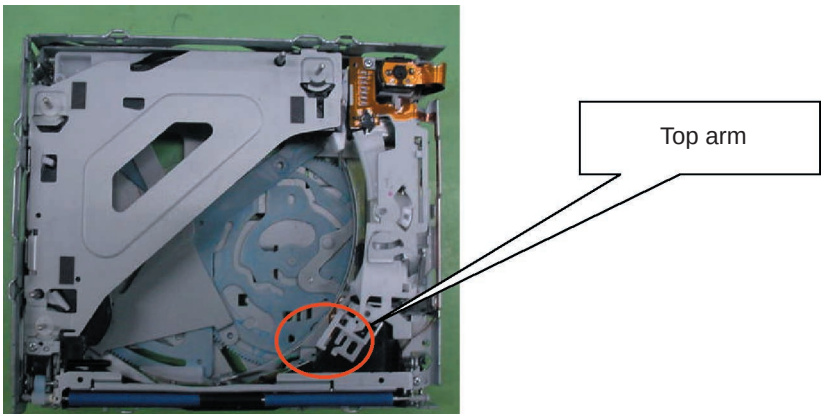


In a stair, 3 of F (front), L (left) and R (right) are linked by an arm at the bottom of mechanics, and when moving it to <- direction, a stage moves to the top. (clockwise when looking from upward)

④ Manually slide the stair to lower the stage.
⑤ Remove four screws which are used to secure the upper case. Remove the upper case.
⑥ Lightly slide the snap-fitted top arm to remove it.

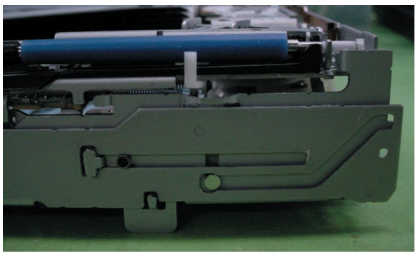




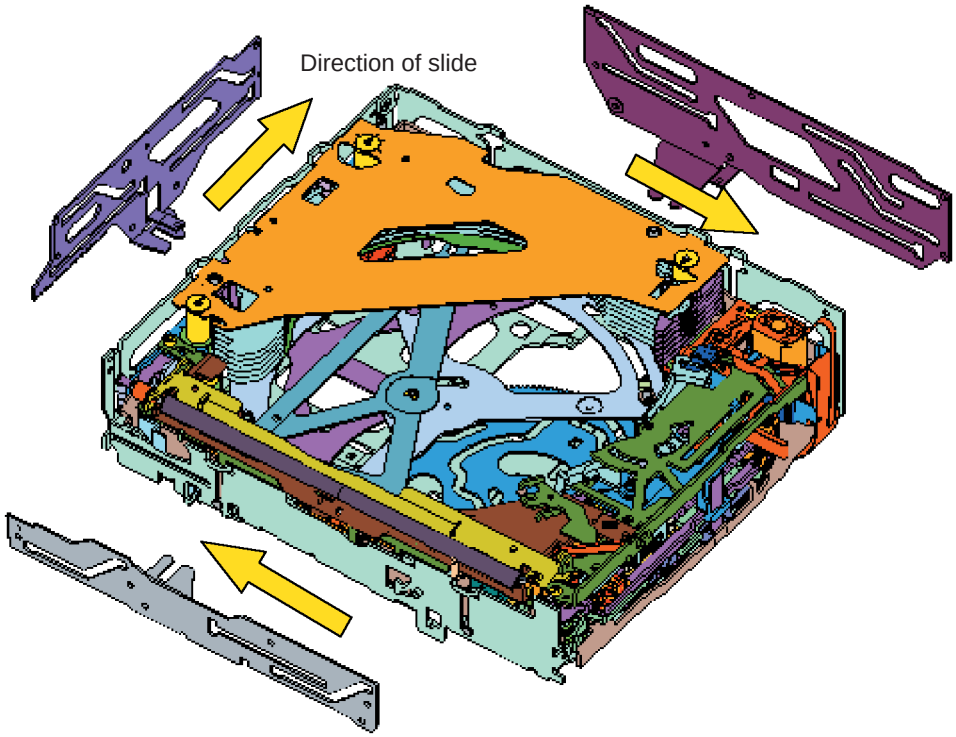


3.3 HOW TO REMOVE THE STAIR

① Slide the stair in the direction for lowering the tray block until it will go no further. (See the photo shown below.)

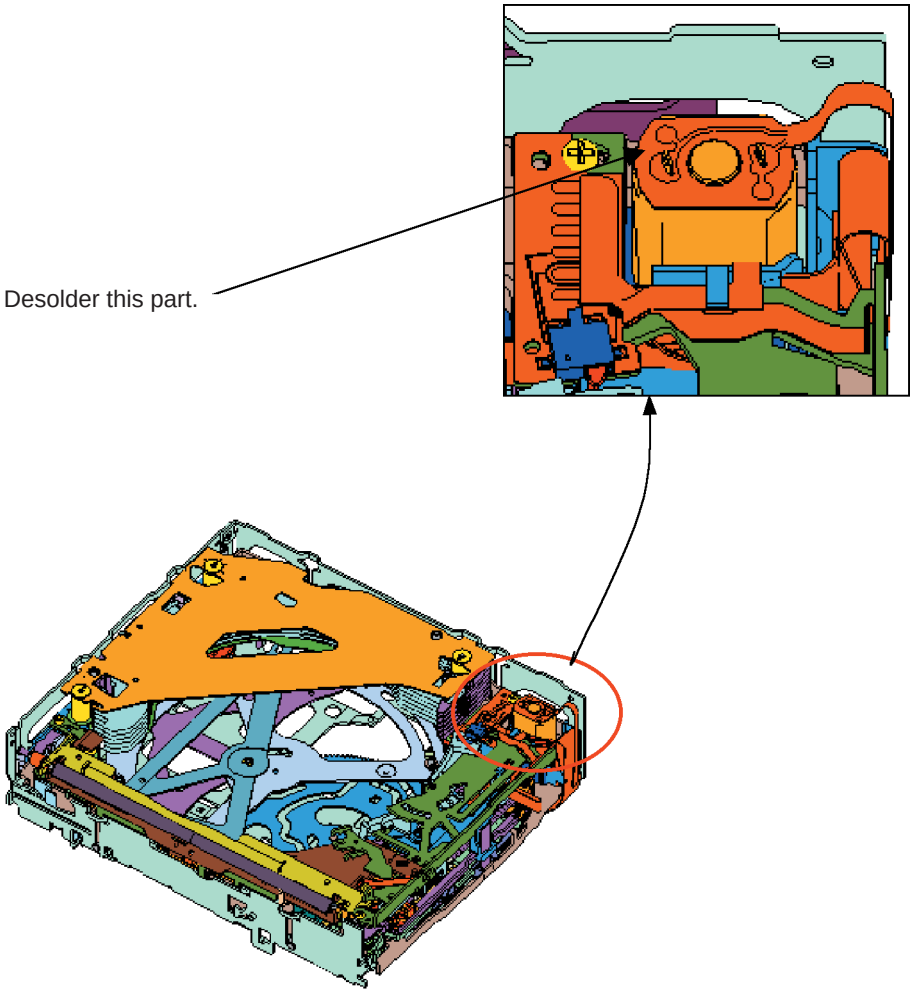


② Remove three stairs.

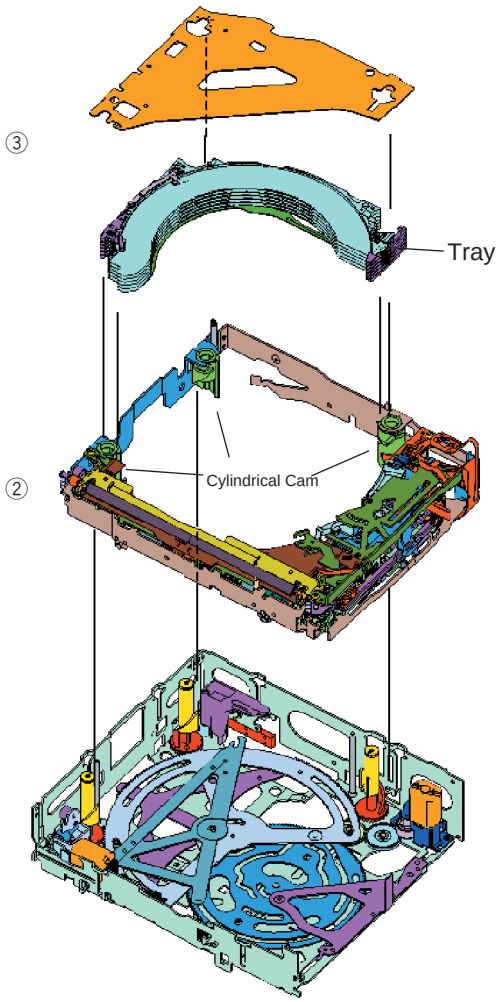


3.4 HOW TO REMOVE THE STAGE

① Desolder the back right cam motor. Then, remove the flexible cable.

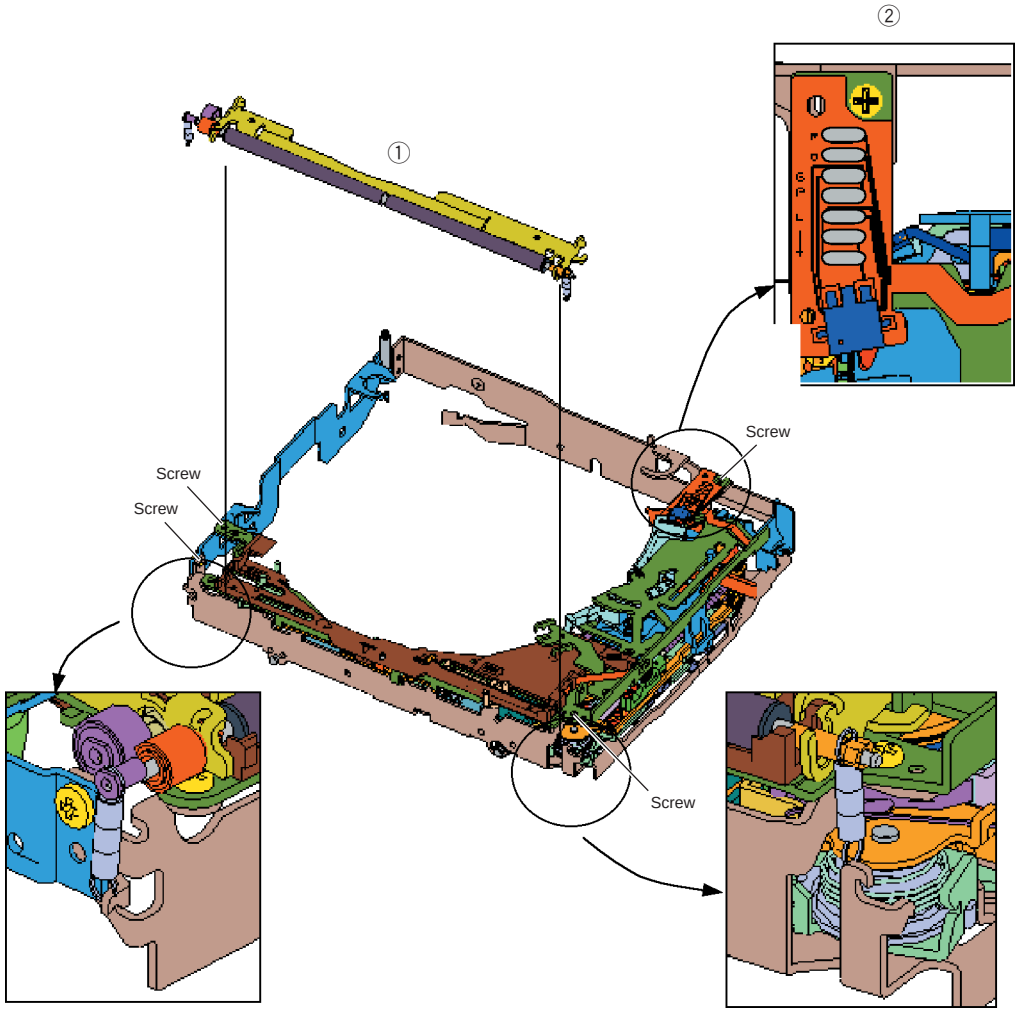


② Draw out the stage block in vertical direction.
③ Lift up the triangular top plate in the vertical direction, then slide it away from you until it comes off.
④ Remove the tray and cylindrical cam from the stage.



3.5 HOW TO REMOVE THE LOAD FRAME

① Remove the springs from both sides of the roller. Remove the roller.
② Desolder and remove the flexible cable.
③ Remove the screws which are used to secure the load frame at four points. Remove the load frame.
Note: Remove springs from metal plate hook, but not necessarily from the resin collar.

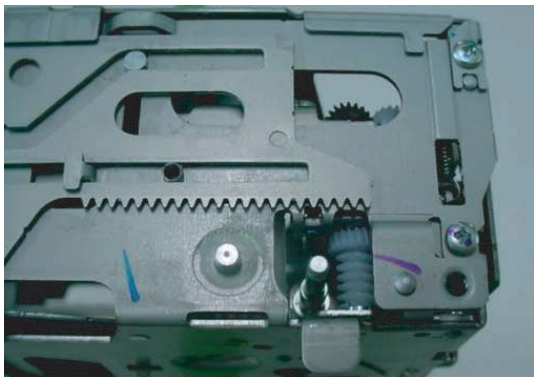


3.6 HOW TO REMOVE THE CRG (ONLY FOR REFERENCE SINCE THIS PROCEDURE IS HARD TO BE COVERED BY OUR SERVICE)

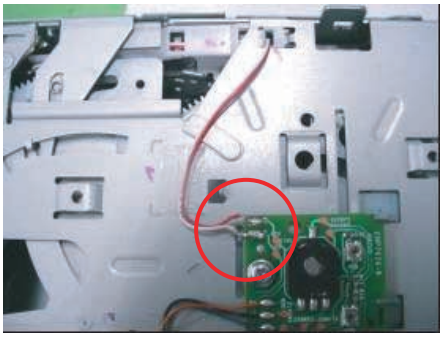
① Slide the part with which the stage link lever is in mesh toward you. Turn the CRG to move it to the play position.
② Remove the resin part and springs.
③ Remove the CRG.

3.7 HOW TO REMOVE THE ELEV MOTOR

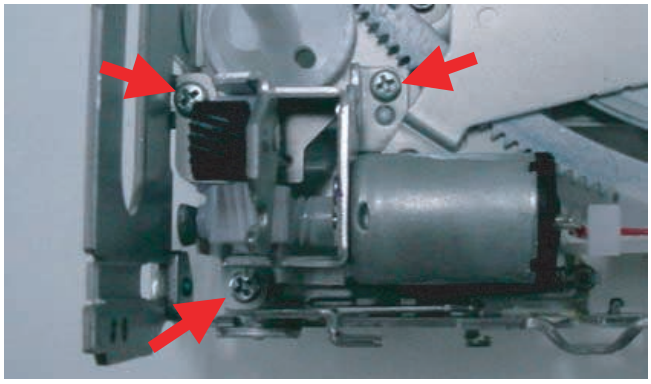
① Check that the ELEV3 gear is removed



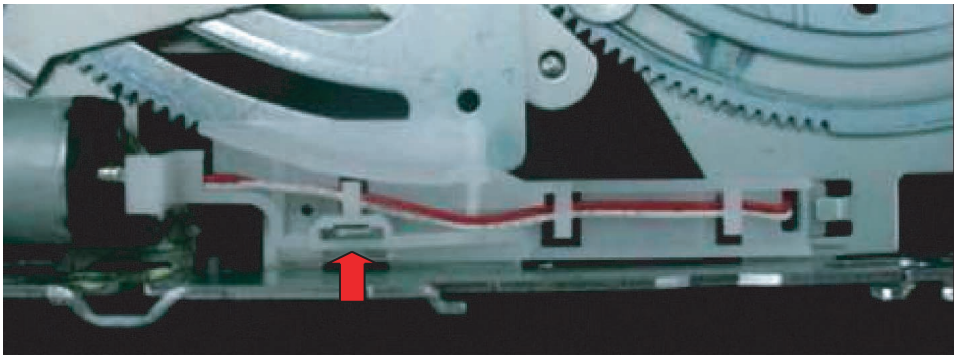
② Remove the solder of two lines (red and white) on the rear side of main chassis



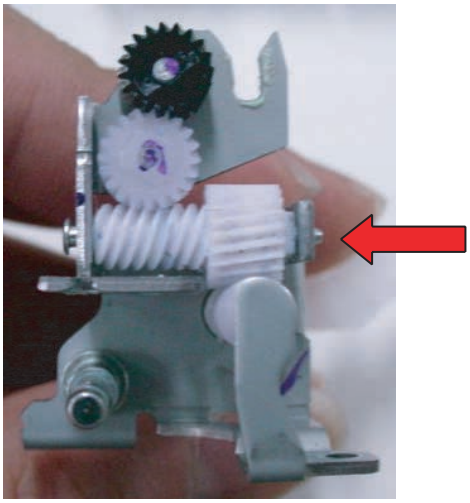
③ Unscrew the three screws shown in the figure



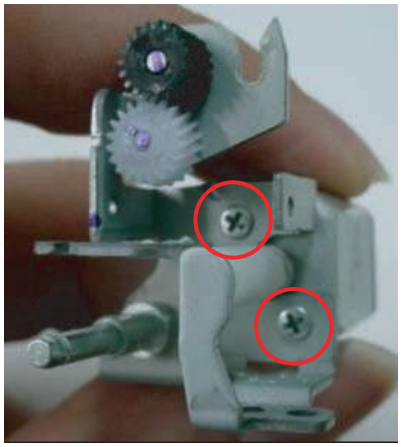
④ Remove the resin part. At this time, it can be removed easily by applying edgewise pressure to the point shown in the figure using the straight slot screwdriver



⑤ Pull out the gear shaft, and remove the gear



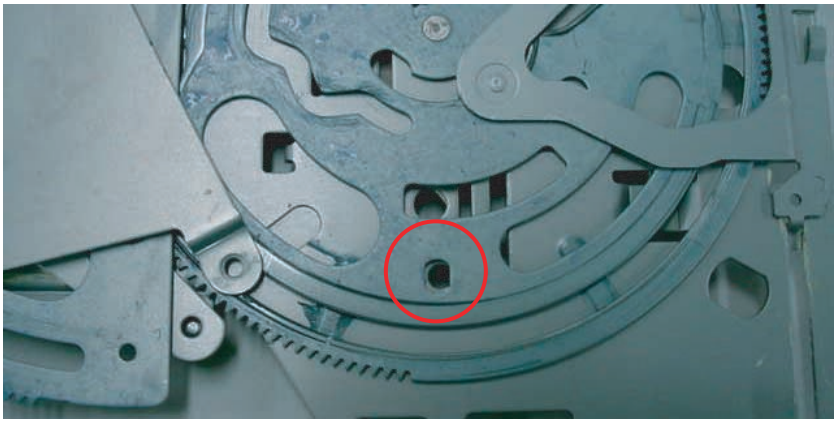
⑥ Unscrew the two screws fixing the motor and remove the wire lead



4. HOW TO ASSEMBLE

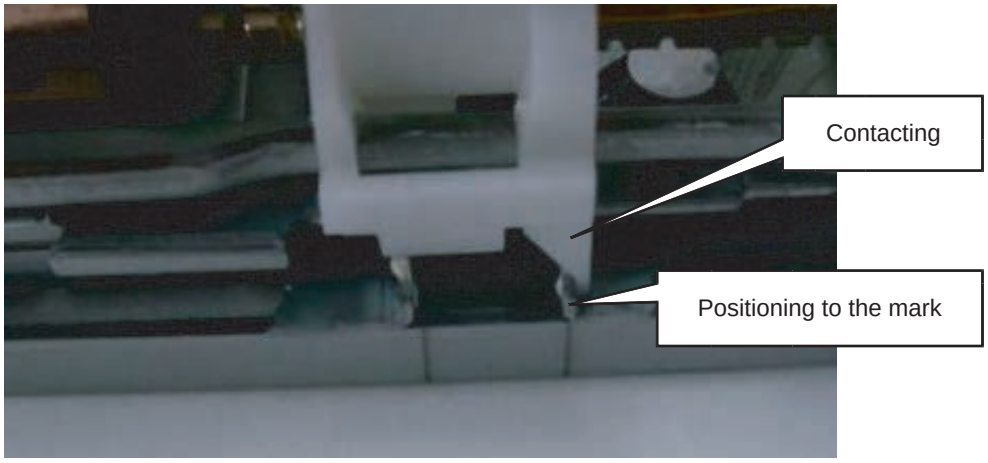
4.1 CHECK BEFORE ASSEMBLING

· Check the location of CAM gear of main chassis.
As shown in the photo below, check that the hole of main chassis can be seen from the hole of cam (it is not necessary to match it perfectly).



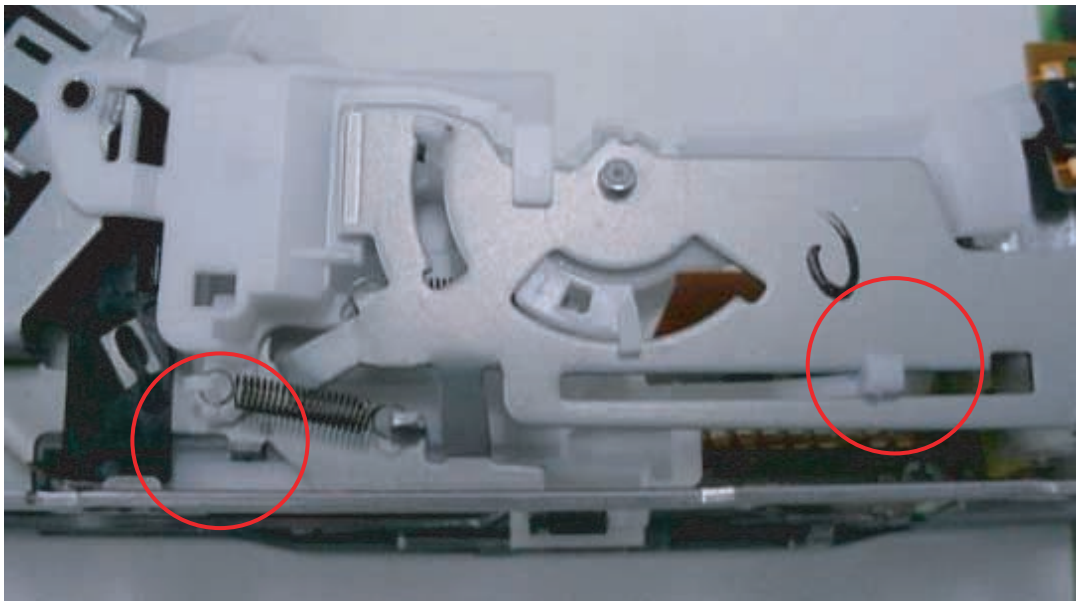
Location of CAM gear

· Check the location of stage lock arm of STG. It is not like as shown in the figure below, move the arm to the position of mark. In a similar way, for the white resin part, move the arm to the position as shown in the photo below.



Location of STG lock arm

At this time, check the part pointed in the figure does not drop off the groove.
When it is dropping off the groove, set it paying attention to the position shown in the photo below.



Location to attach the white resin

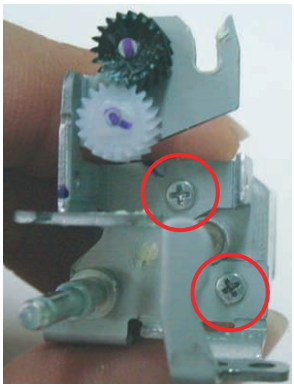
4.2 ASSEMBLING THE ELEV MOTOR
(When the ELEV motor is not removed, this step is not necessary)

· Press the gear into motor, and attach the wire lead.
Connect the white wire lead to the white mark side on bottom panel of motor.

Mark on bottom panel of motor

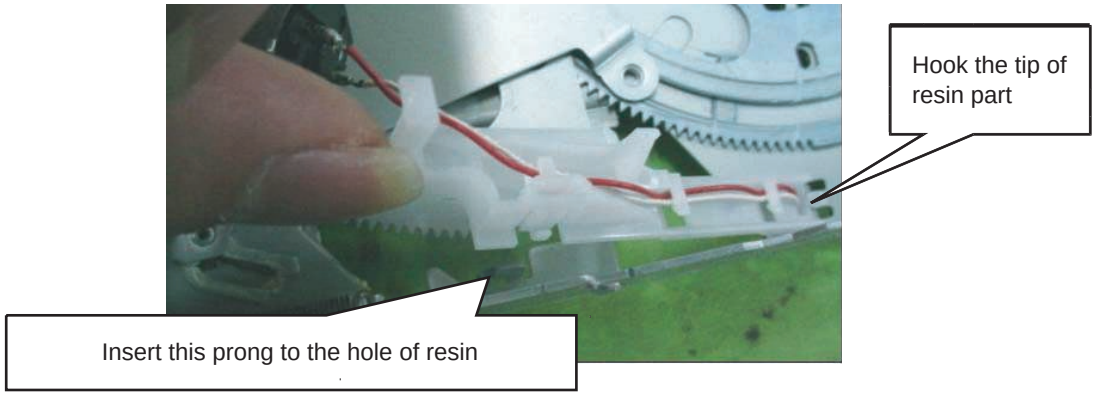
How to connect the wire lead

· Fix the motor to the bracket with screws



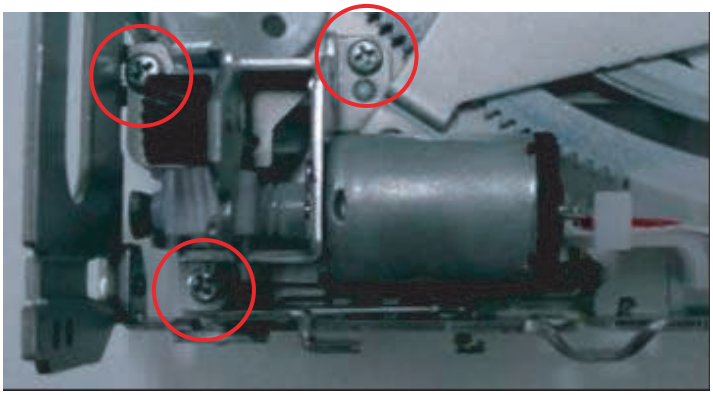
How to fix the bracket

· Fix the resin part to the main chassis



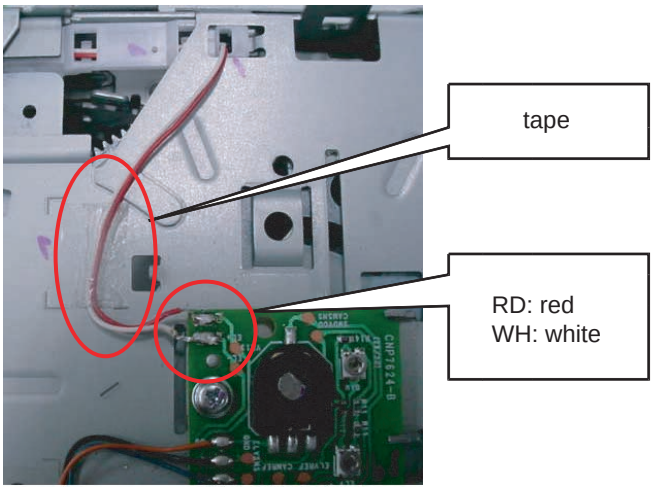
How to fix the resin part

· Secure the three screws



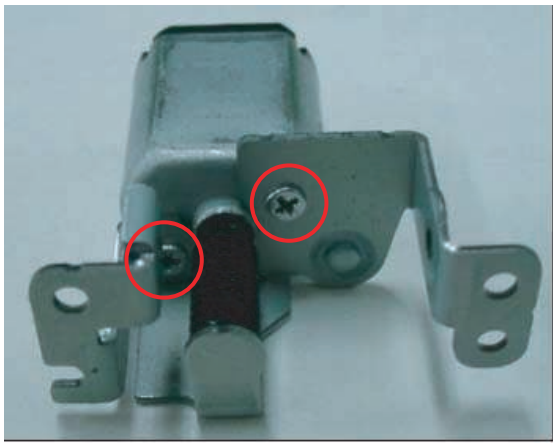
How to fix the ELEV motor unit

· Solder the wire lead to the board on the rear side of main chassis, and fix it with tape.

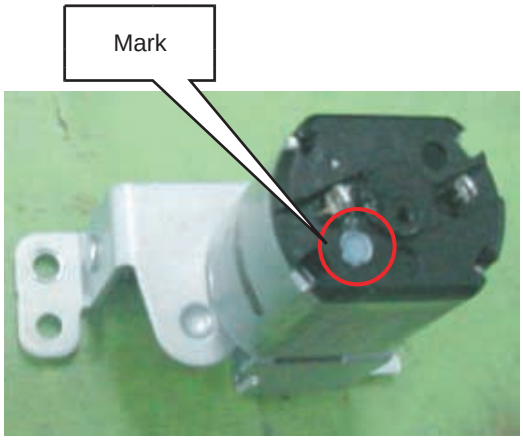


4.3 ASSEMBLING THE CAM MOTOR

· Press the gear into motor, and fix it to the bracket with two screws
At this time, take care of the direction to fix the gear. Check the location of mark is as shown in the photo shown in lower right.

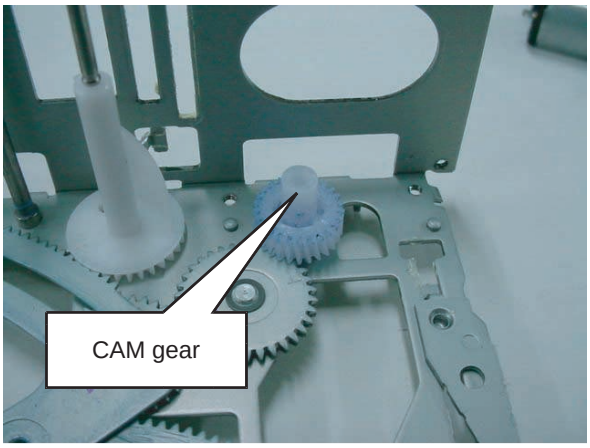


How to fix the motor

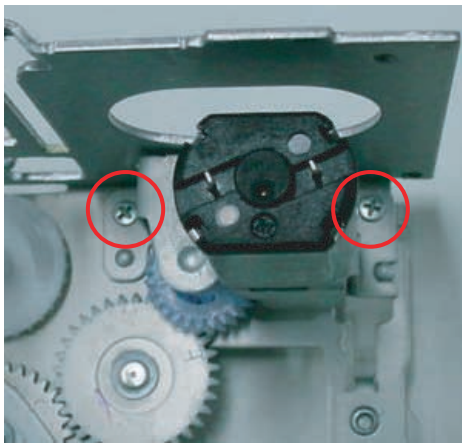


Mark for attaching the motor

· Attach the CAM gear, and fix the CAM motor unit with two screws



Location to attach the CAM gear



Location to attach the CAM motor unit

4.4 ASSEMBLING THE STAGE UNIT

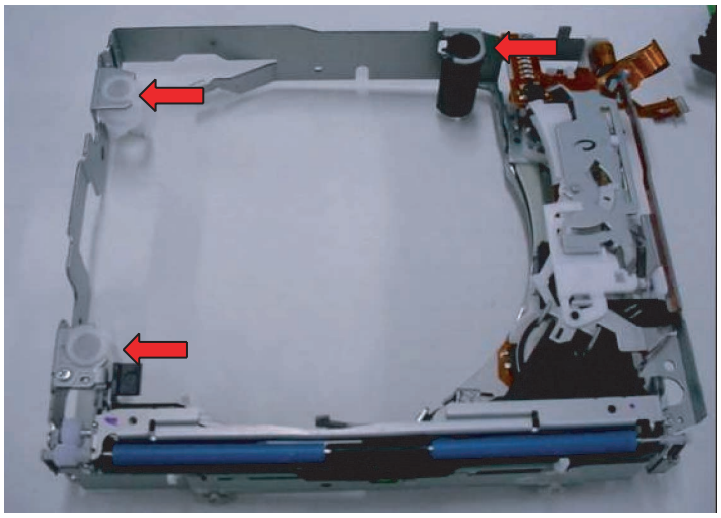
① Prepare the tray

Pile the 6 trays so that the tray with steel plate is at the bottom

Tray (6-pile)

② Prepare the STG

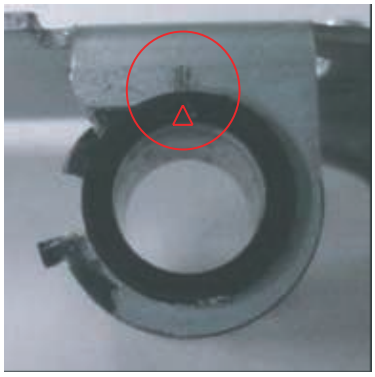
Attach the cylinder cam OUT to the stage.
At this time, attach the black cylinder cam at the right back.



Location to attach the cylinder cam OUT

Rotate the matched cylinder cam and match the marks of STG and cam (for all cams).

Left back

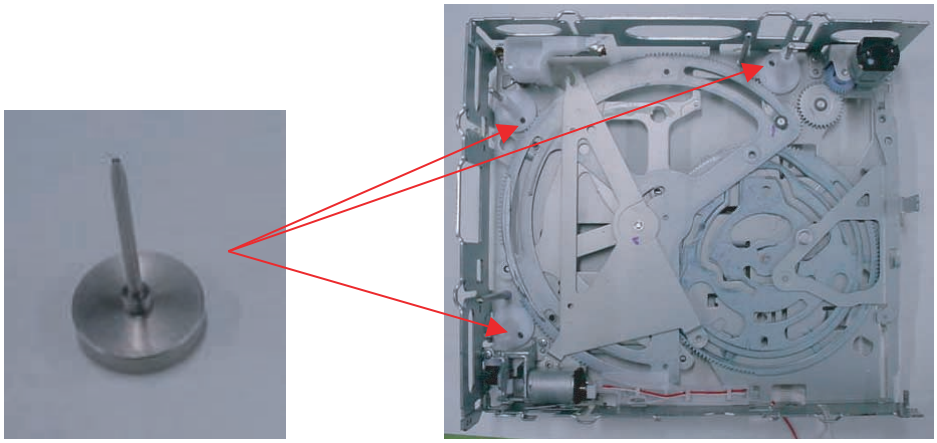


Right back

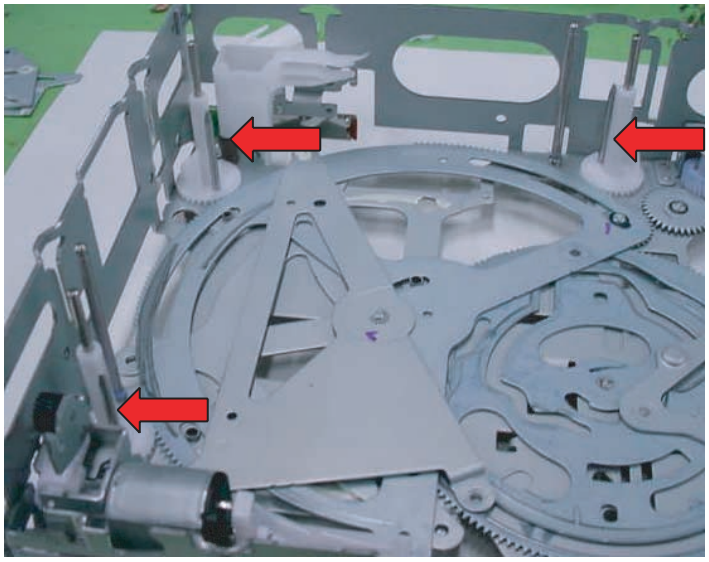
Left front

Location of mark of cylinder cam OUT

③ From rear side of main chassis, insert the assembly jig to the cylinder cam gear (x3).

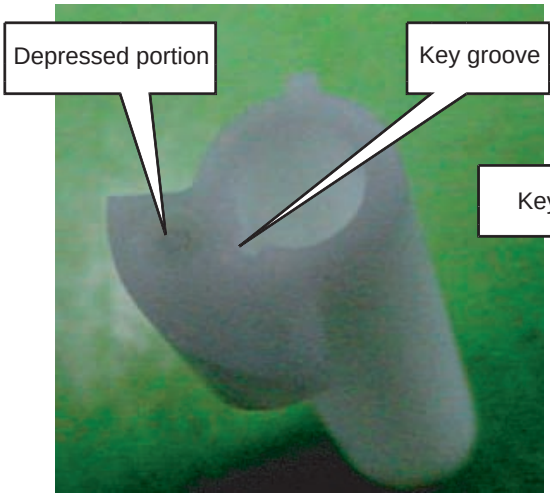


Assembly jig
GGF1538*3



After inserting the assembly jig

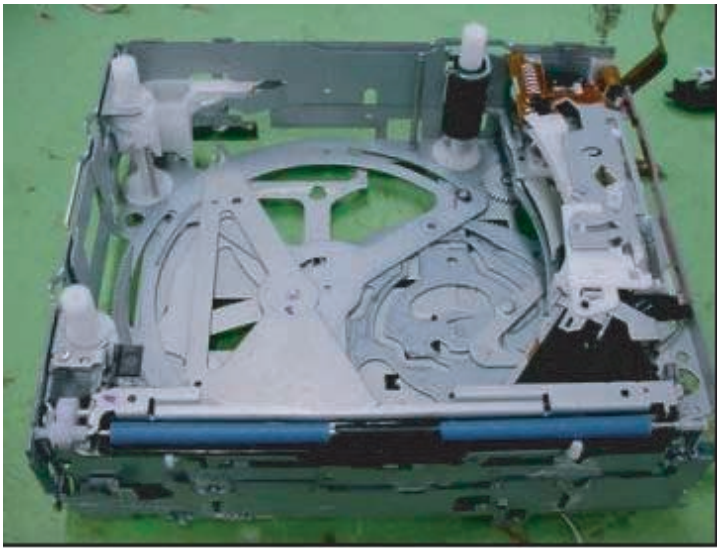
④ Insert the cylinder cam IN (x3)
At this time, set the key part of cylinder cam gear to the key groove of inside of cylinder cam IN.
Match the tip of assembly jig to the depressed portion on the bottom panel of cylinder cam IN.



Cylinder cam IN

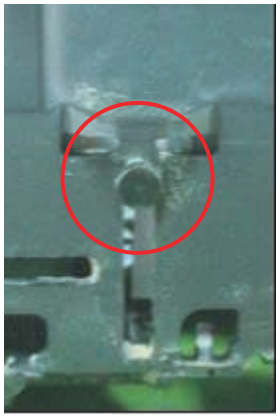
Cylinder cam gear

⑤ Attaching the STG
At this time, as the right front part does not have a bracket, support it with something.

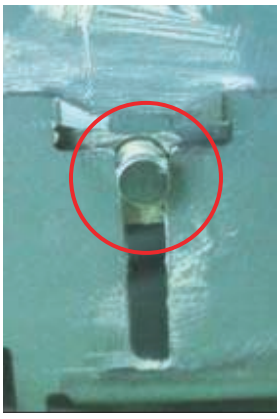


After attaching the STG

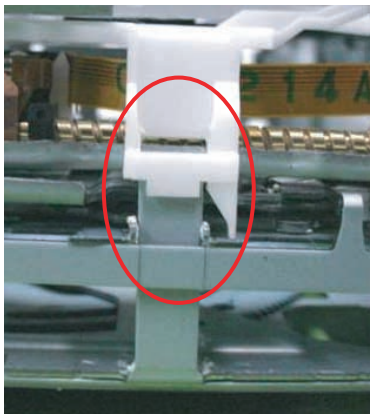
At this time, check the three parts shown in the figure below fit.
Especially, for the right panel, take care so that the metallic bar protruding from the main chassis fits the both of stage link lever and white resin part.



Left front



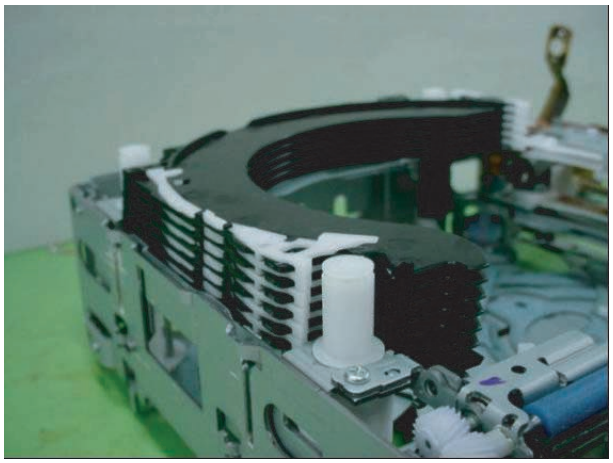
Right front

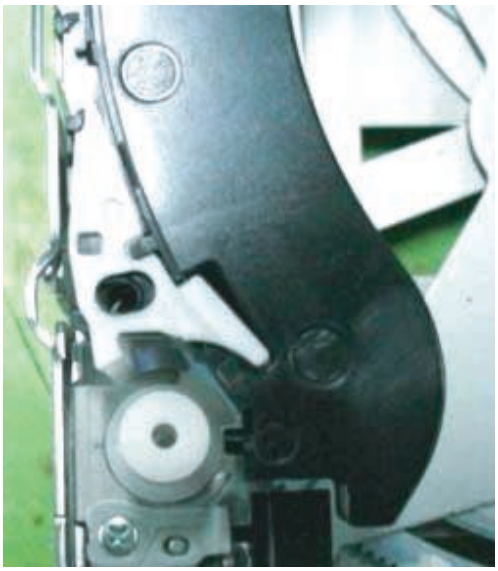


Right panel

* In this operation, take notice that the cylinder cam whose mark is matched in step ② may jolt out of alignment. If it jolts out of alignment, reposition the key groove and mark.

⑥ Place the tray. At this time, the tray pin should be inserted to the location shown in the figure.

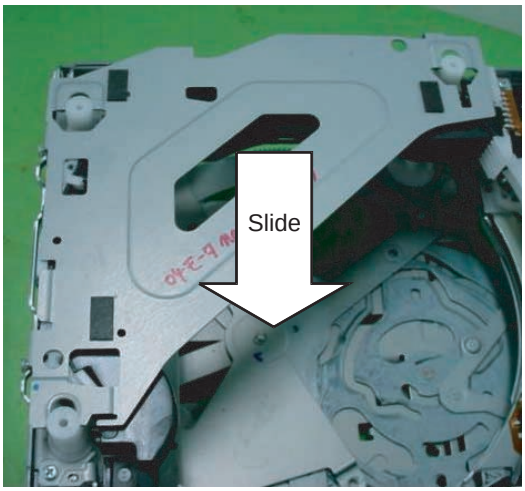




State of attached tray

⑦ Insert the tray holder

Insert the tray holder to the tip of cylinder cam IN, and then slide it to forward and fix it. At this time, take notice that the black sheet on the rear side of tray holder sticks easily in the tray.
Check it is properly set (3 parts) as shown in the figure at lower right.



Direction to slide the tray holder

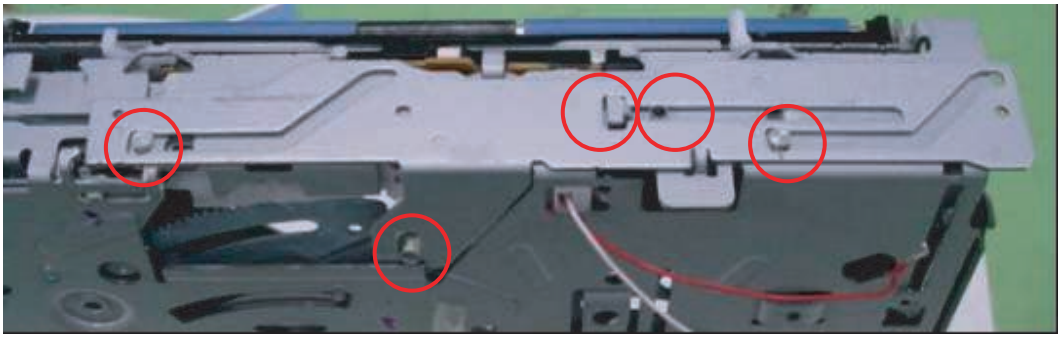
Tray holder rigid part

⑧ Pick up the main chassis slowly, and pull out the jig

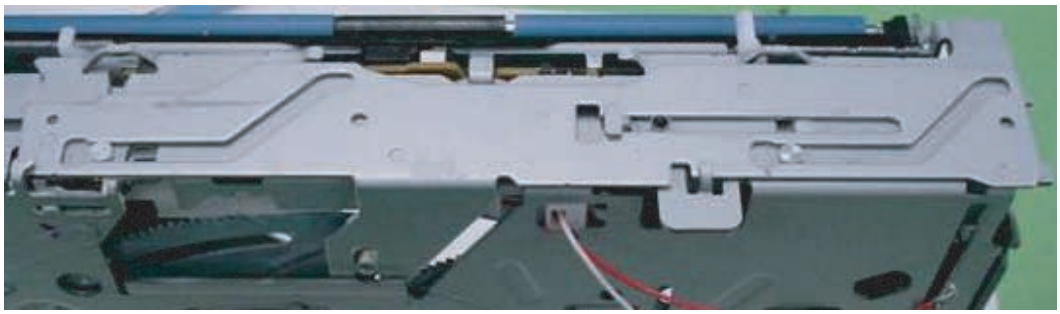
The STG unit is properly assembled

4.5 FROM ATTACHING THE CASE ABOVE TO COMPLETION

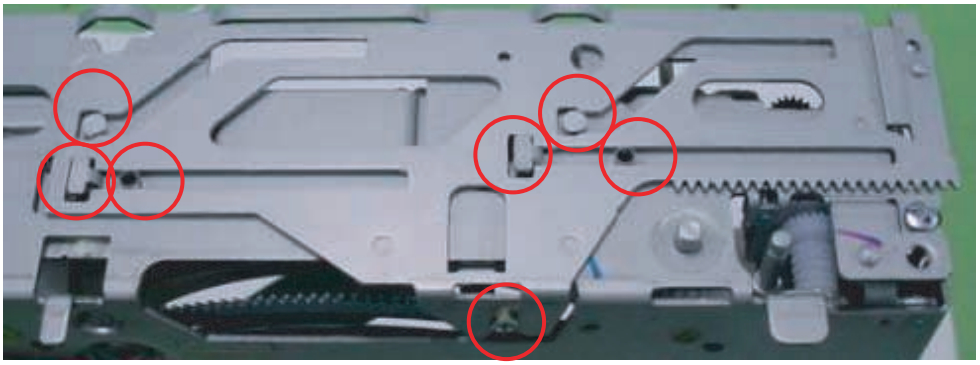
① Attach the front stair
Check that is properly set (5 parts) as shown in the figure below.



Next, slide the attached stair to left side slightly (figure below).

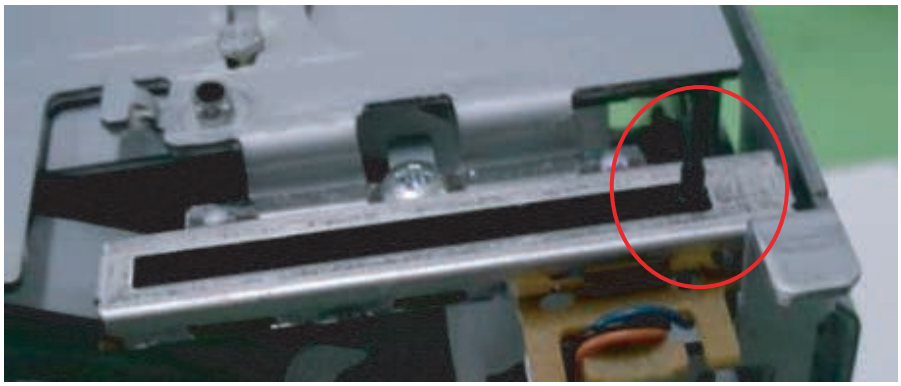


② Attach the stair on left side safe.
Check that is properly set (6 parts) as shown in the figure below.



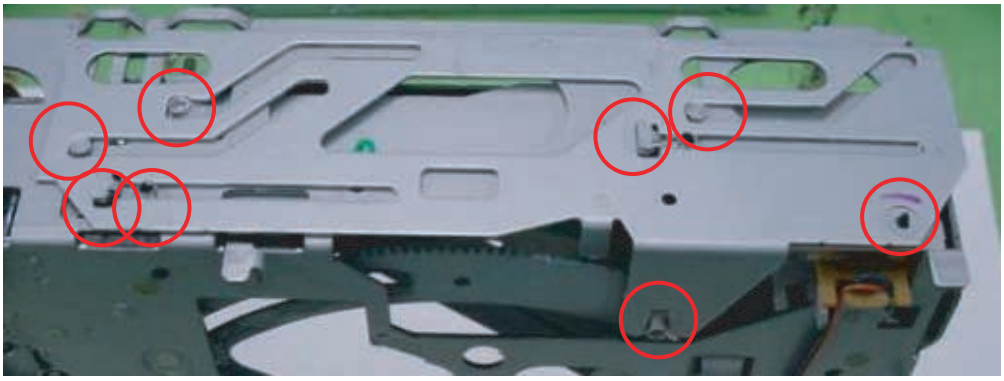
③ Attach the rear stair

Before attaching the rear stair, slide the Potentiometer on the rear panel to the location shown in the figure below.



Attach the stair.

Check that the eight positions shown in the figure below are properly set.

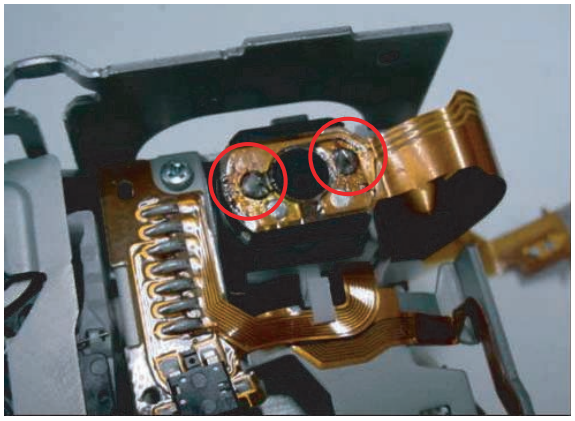


* When attaching the front stair, fix the front side to the upper panel, and when attaching the left panel stair and rear panel stair, fix the side panel to the upper panel.

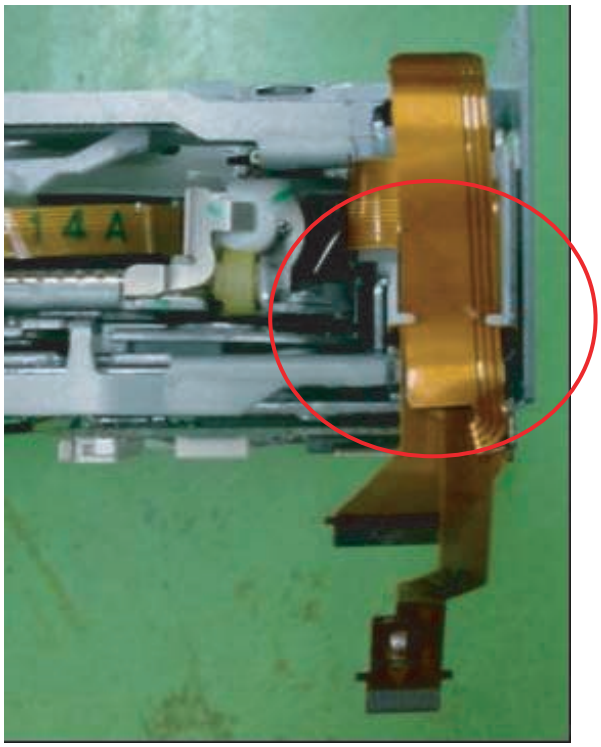
· Slide the stair to the left

Check the all stairs are fitted in the groove, and slide the stairs to the left.

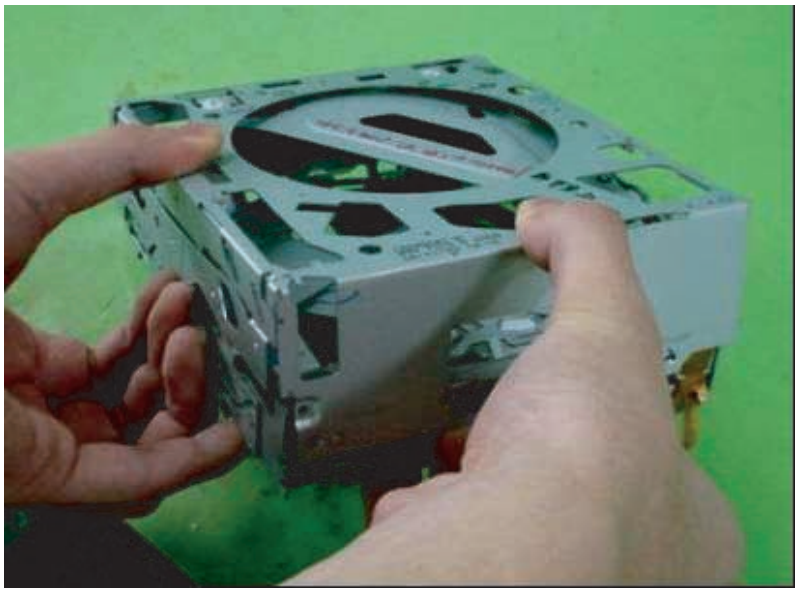
④ Solder the two cam motors



⑤ Check the side panel flexible cable is not removed.



⑥ Fit the shutter and upper case, and attach it to the mechanism unit.
* As shown in the figure below, it is easy to assemble the unit by fitting the right side opening the shutter and right side after fitting the left side. The state of mechanism is recommended to be at 1F play position.



How to attach the upper case

Hook the detection lever to the rear side of front panel of shutter.
* Push the detection lever to the left side lifting the left part of upper case

Abnormal

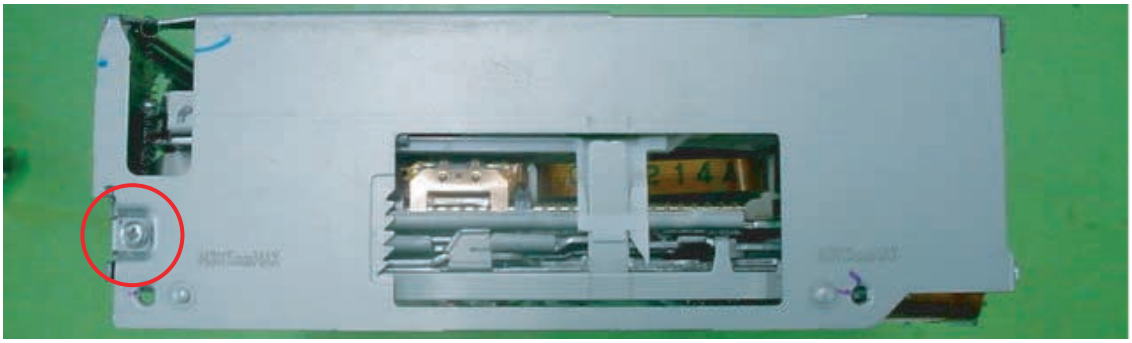
Normal

Location of detection lever

⑦ Secure the screws
Secure the four screws on the panels below.

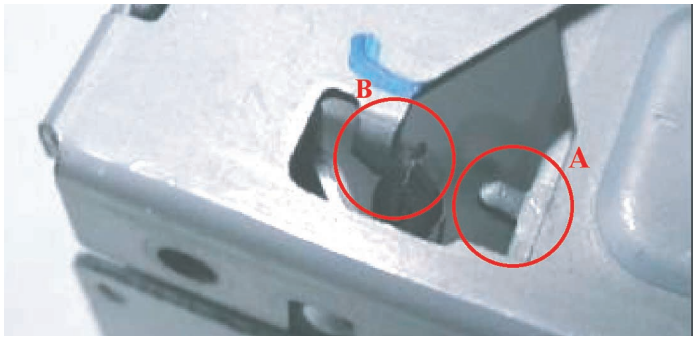
Left panel

Rear panel



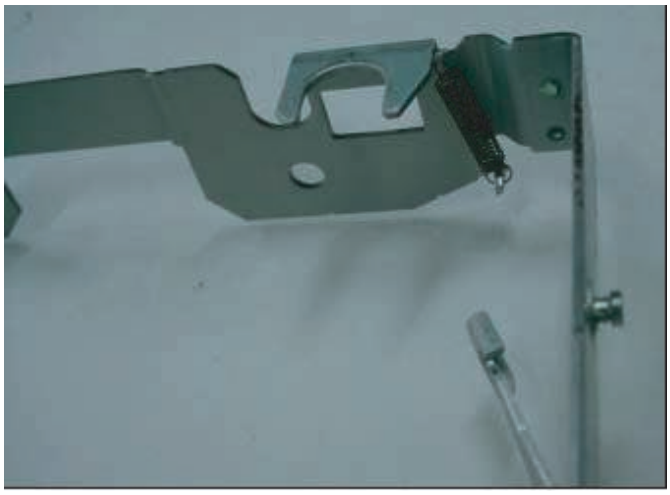
Right panel

⑧ Lift the stage to the top floor by sliding it, and hook the spring at left back
Hook the spring which is temporarily hooked to the A part to B part.



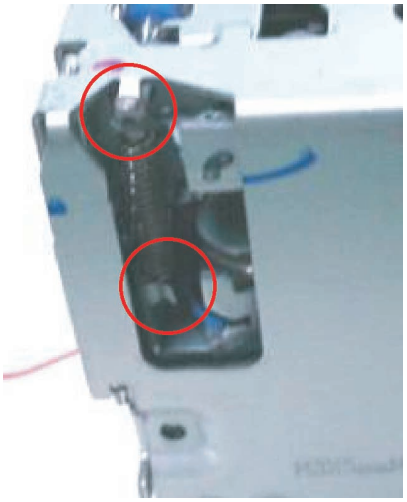
Spring of left back part

* If failing to hook the spring, remove the STG again, and hook the spring again as shown in the photo below.



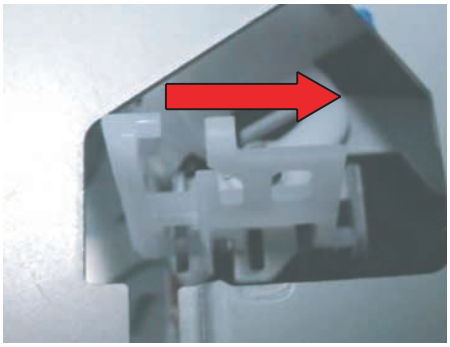
Left back part of stage frame

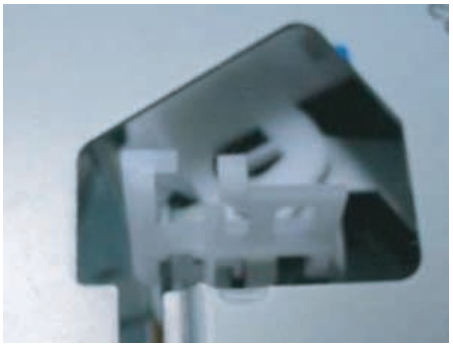
⑨ Hook the right front spring
Hang the spring on the hook shown in the figure below.



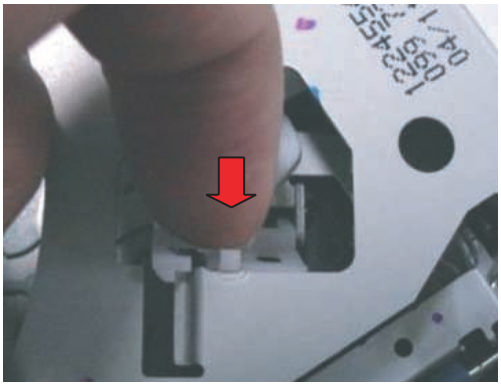
Right front spring

⑩ Attach the top arm
As shown in the figure, attach it sliding it aside after insert it vertically from above

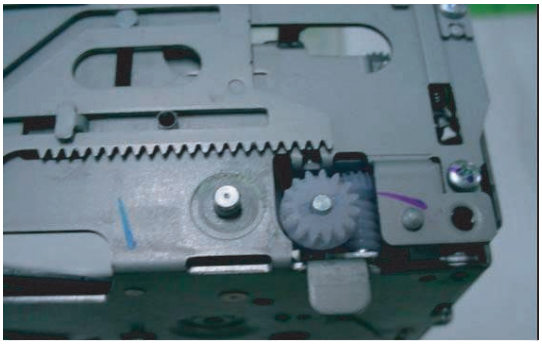




As shown in the photo below, press it with a finger, and set it as shown in the right figure.

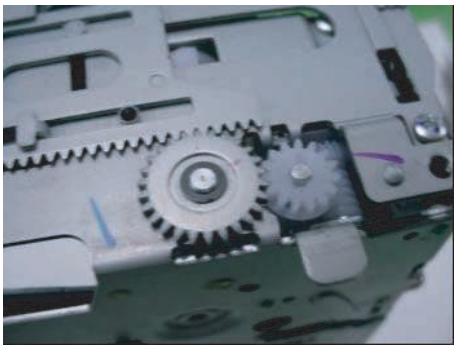


⑪ When the ELEV3 gear is removed, set it by pressing as shown below.

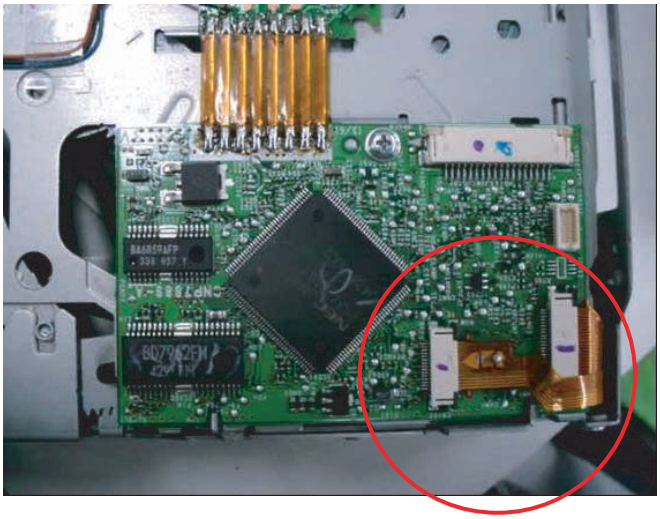


ELEV3 gear

Attach the ELEV4 gear, and fix it with poly washer.



⑫ Insert the two flexible cable as shown in the figure below, and slide and lock the claw, and then remove the short-soldering.



Service Manual

ORDER NO.
CRT2406

CASSETTE MECHANISM MODULE(3L)

CX-1011

- **This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	Cassette Mechanism Module	Deck Unit
KEH-P5900R/X1M/EW	CRT2399	EXK4000	EWM1023
KEH-P4900R/X1M/EW	CRT2399		
KEH-P4930R/X1M/EW	CRT2399		
KEH-P490/X1M/UC	CRT2398		
KEH-P4900/X1M/UC	CRT2398		
KEH-P4950/X1M/ES	CRT2398		
KEH-P4950J/X1M/ES	CRT2400		
KEH-P6900R/X1N/EW	CRT2429	EXK4010	EWM1024
KEH-P690/X1N/UC	CRT2430		
KEH-P6950/X1N/ES	CRT2430		
KEH-P6910R/X1N/EE	CRT2429		
KEH-P5900/X1N/UC	CRT2431		
KEH-P5950/X1N/ES	CRT2431		
KEH-3930R/X1M/EW	CRT2420	EXK4100	EWM1023
KEH-3900R/X1M/EW	CRT2420		
KEH-3910/X1M/EE	CRT2420		
KEH-3950/X1M/ES	CRT2421		

CONTENTS

1. MECHANISM DESCRIPTION AND GREASING.....2
2. GREASE APPLICATION LOCATION AND GREASE NAME 12
3. DISASSEMBLY.....28
4. ADJUSTMENT 29

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PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

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K-ZZB. OCT. 1999 Printed in Japan

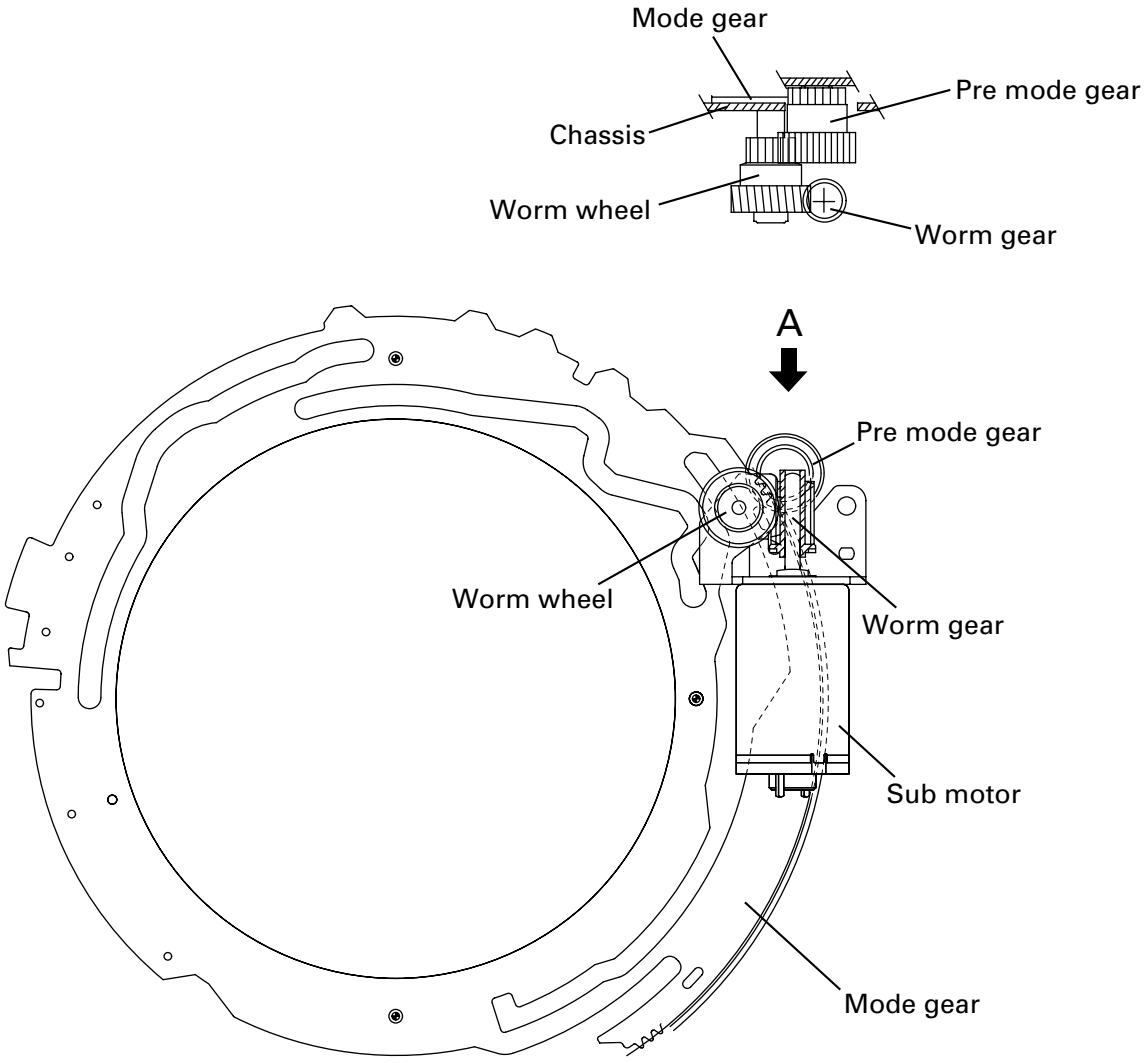
1. MECHANISM DESCRIPTION

1.1 DRIVE OPERATION

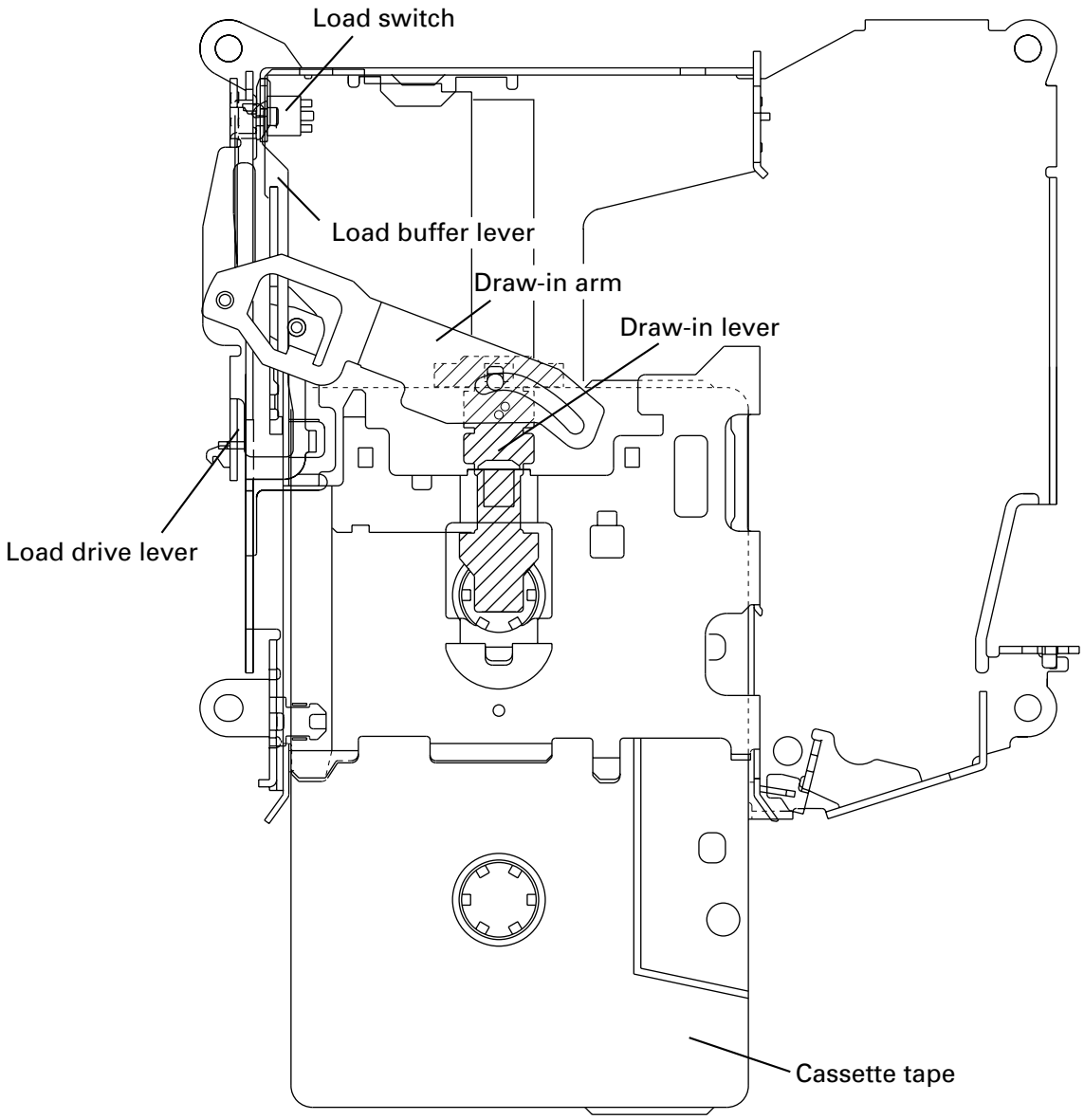
Inserting the cassette tape → Draw in → Put in down → Release ⟷ Forward play ⟷ REW ⟷ FF ⟷ Reverse play

Eject ← Draw out ← Lift ←

All motive force(except that for tape running) is supplied by the sub-motor.
All the operation modes including tape insertion and ejection are switched via the mode gear.



1.2 LOADING AND EJECT OPERATIONS(1)



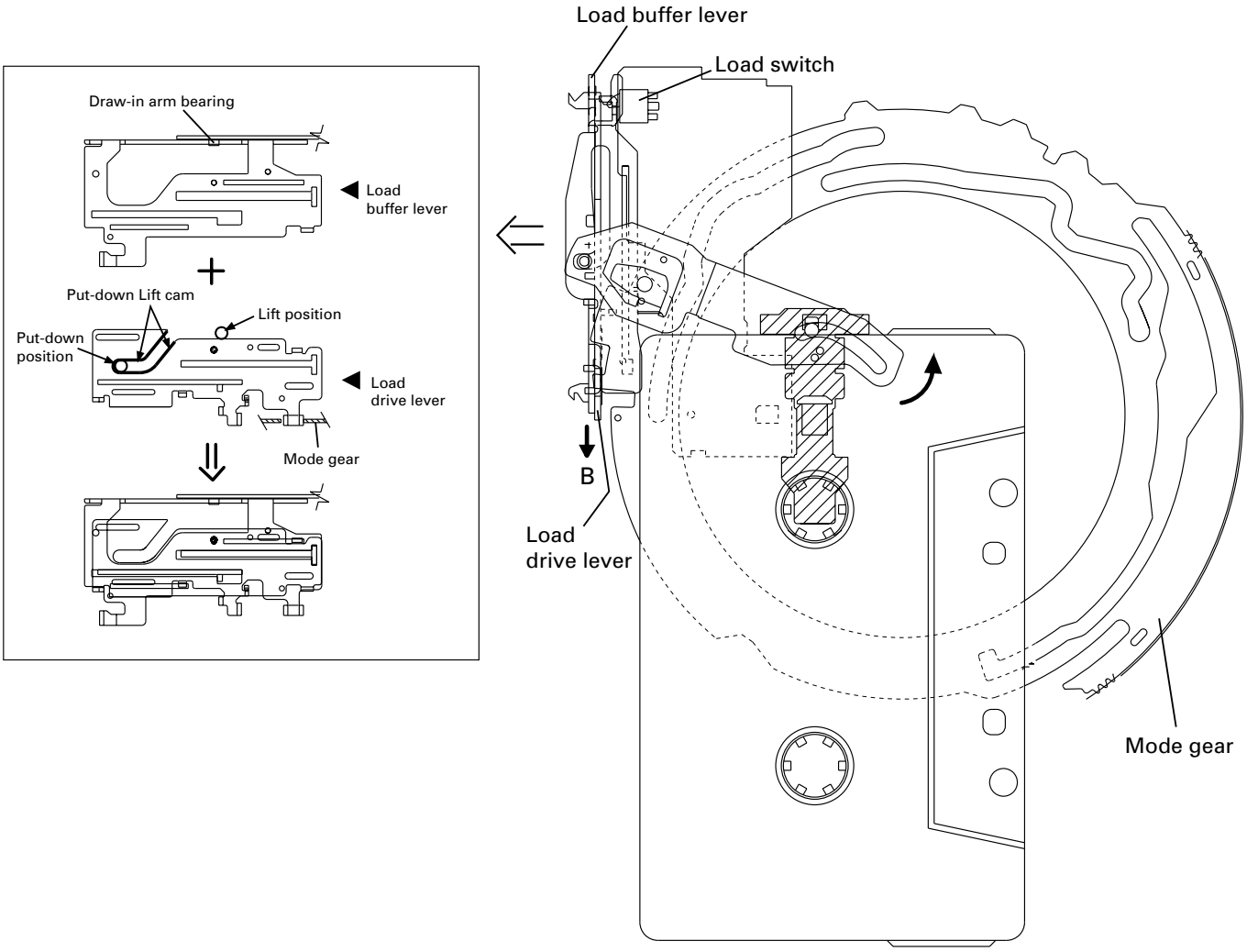
● Loading operation

1. Insert a cassette tape into the slot.
2. The cassette tape pushes the draw-in lever. Then the load switch is turned ON via the draw-in arm and load buffer lever.
3. The sub motor starts running.
4. The sub motor turns the mode gear. Then the mode gear moves the load drive lever and load buffer lever.
5. The shaft holder of the load buffer lever rotates the draw-in arm to draw in the cassette tape.

● Eject operation

1. The cassette tape is ejected in accordance with the reverse of the loading operations. After that, the load switch is turned OFF and the sub motor stops rotating.

1.3 LOADING AND EJECT OPERATIONS(2)



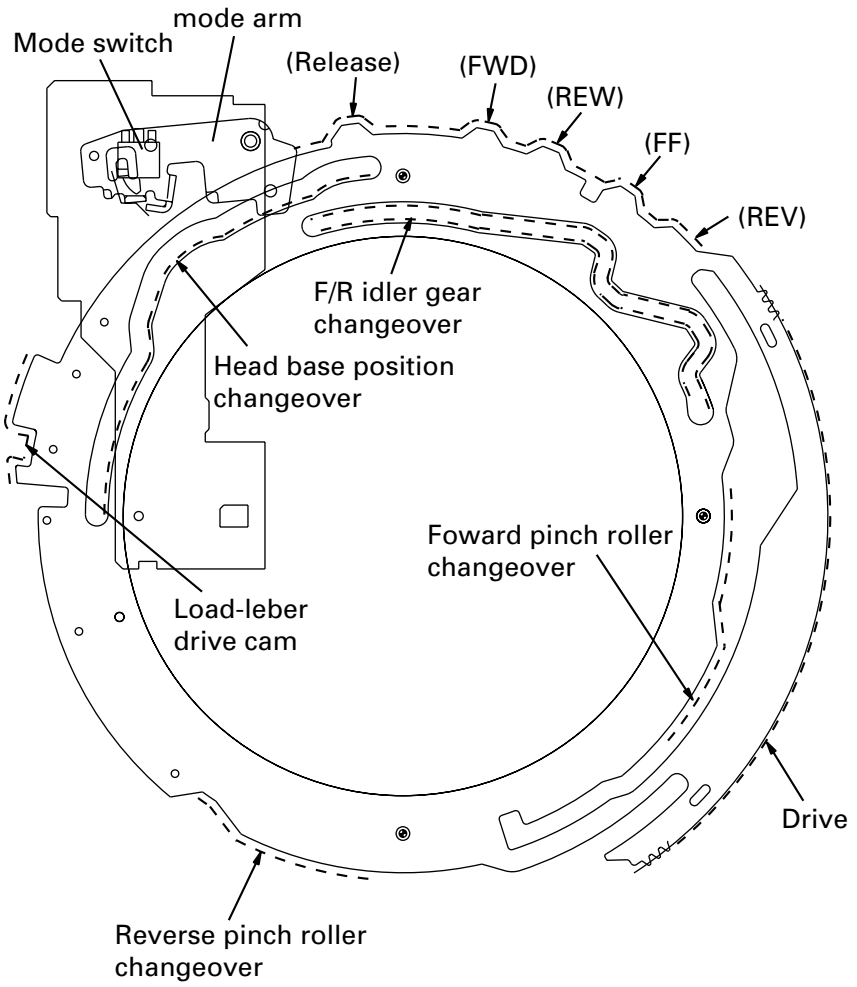
● Loading operation

1. When the mode gear rotates, the load drive lever moves in the direction B marked with an arrow in the figure.
2. As the load buffer lever is linked with the load drive lever via a spring, the load buffer lever turns the draw-in arm in the cassette.

● Eject operation

1. Eject operation is done in accordance with the reverse of the loading operation.

1.4 MODE CHANGEOVER



The mode gear is rotated by rotation of the pre mode gear which is driven by the sub-motor.

The modes are in series in the order of "release"⟷"forward play"⟷"REW"⟷"FF"⟷"reverse play".

The rotation of the mode gear makes changeover of the head position, press contact between the pinch rollers(forward, reverse), the rewinding reel rotation, etc.

The actions to be performed in the separate mode are show in Fig.1 through 5.

● **Release**

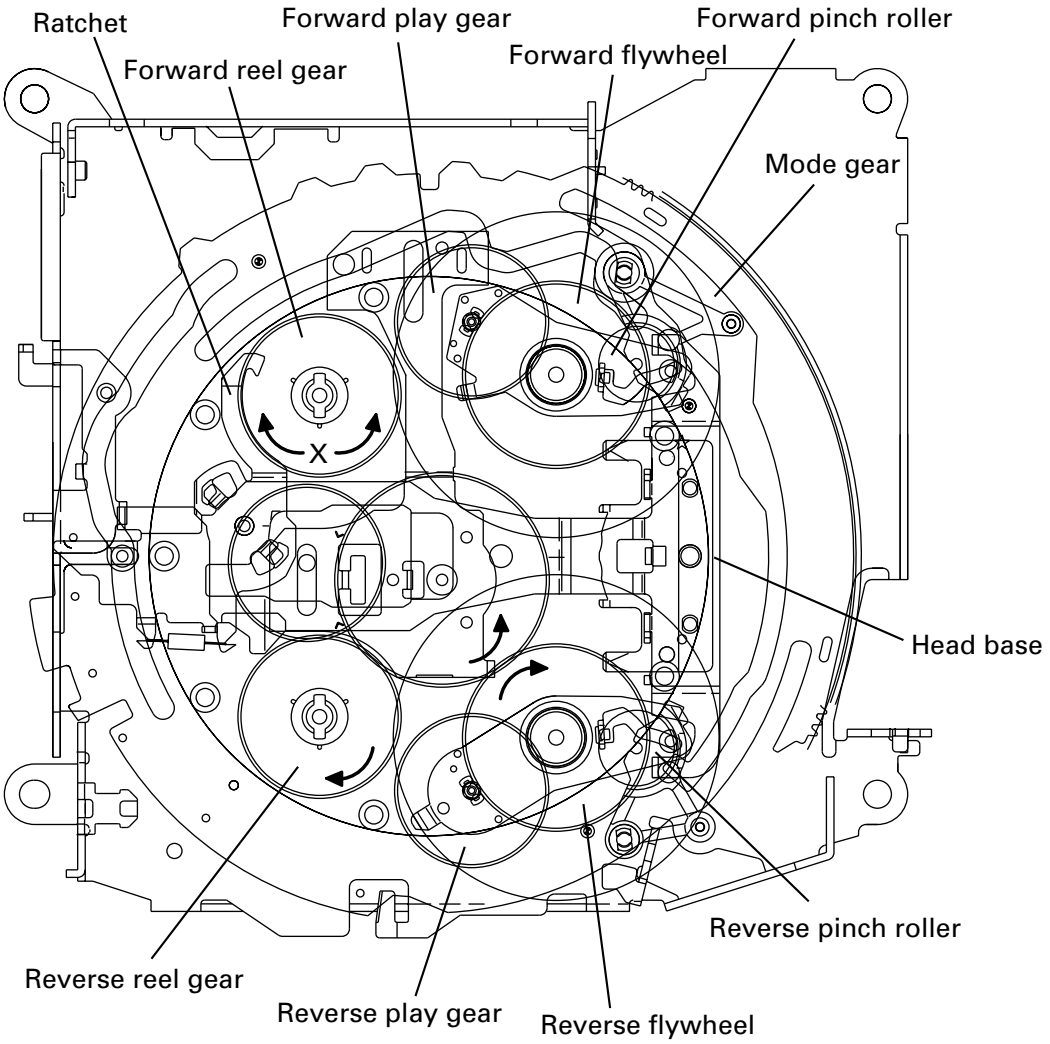


Fig.1

● **Forward Play**

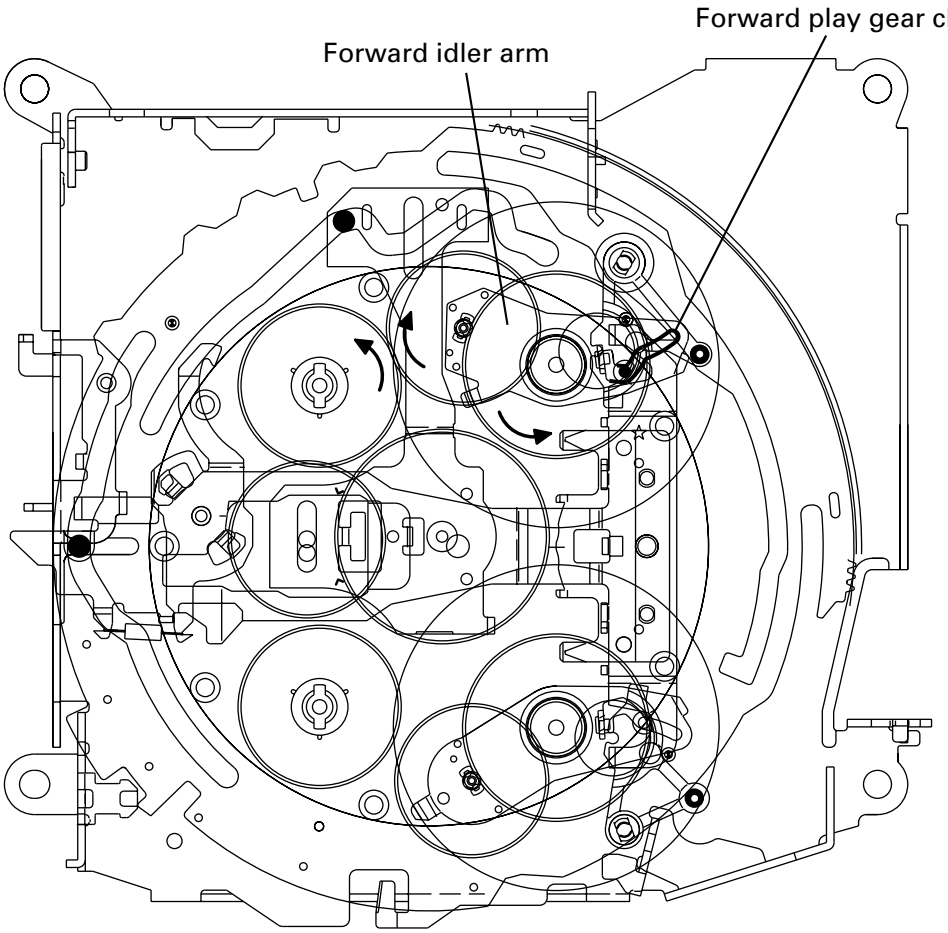


Fig.2

● **REW**

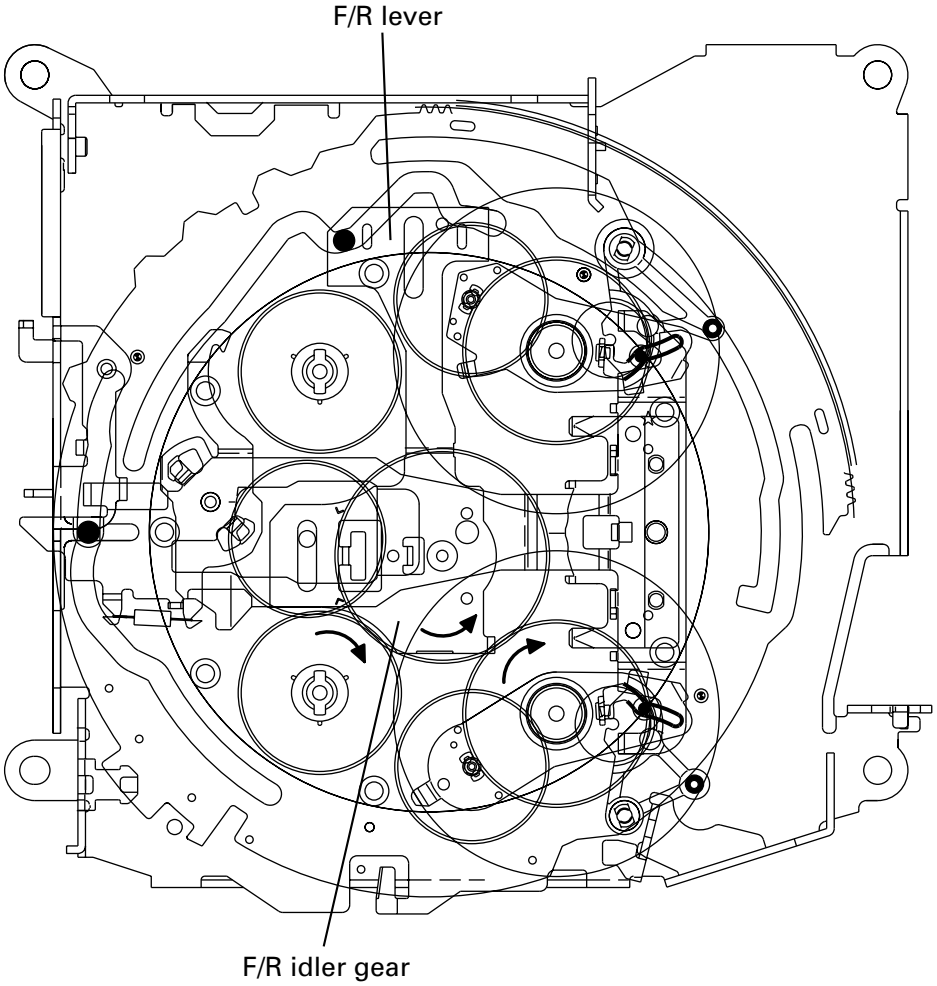


Fig.3

● **FF**

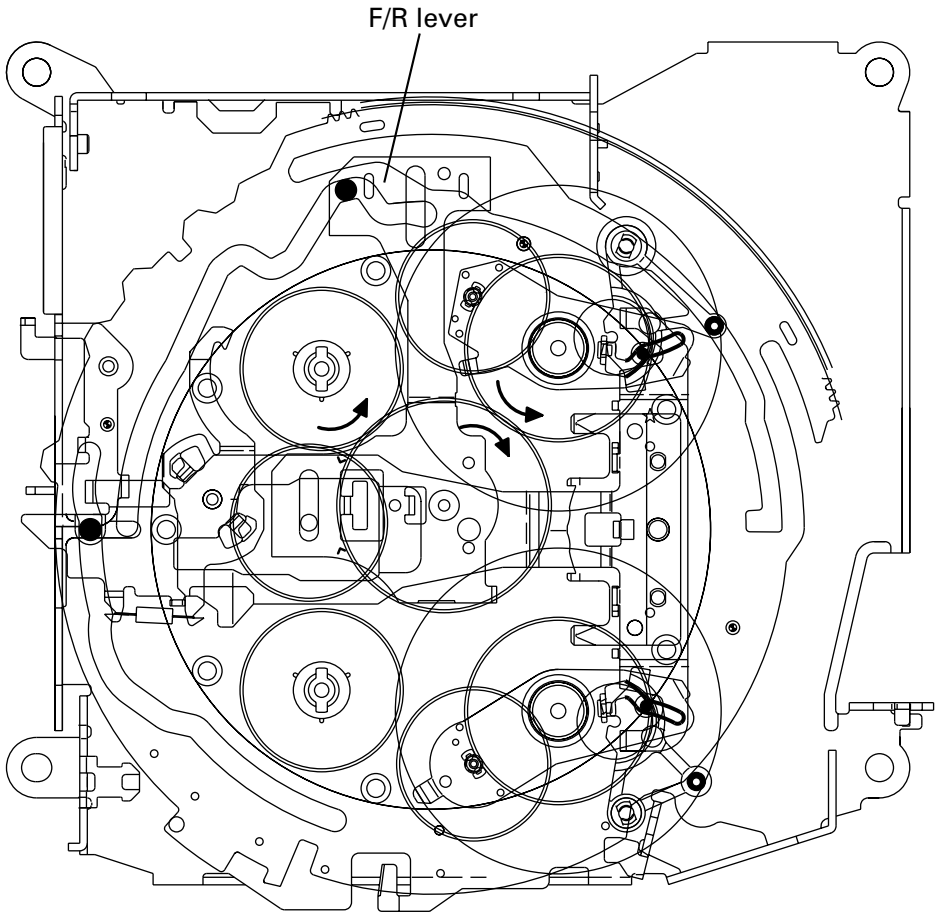


Fig.4

● **Reverse Play**

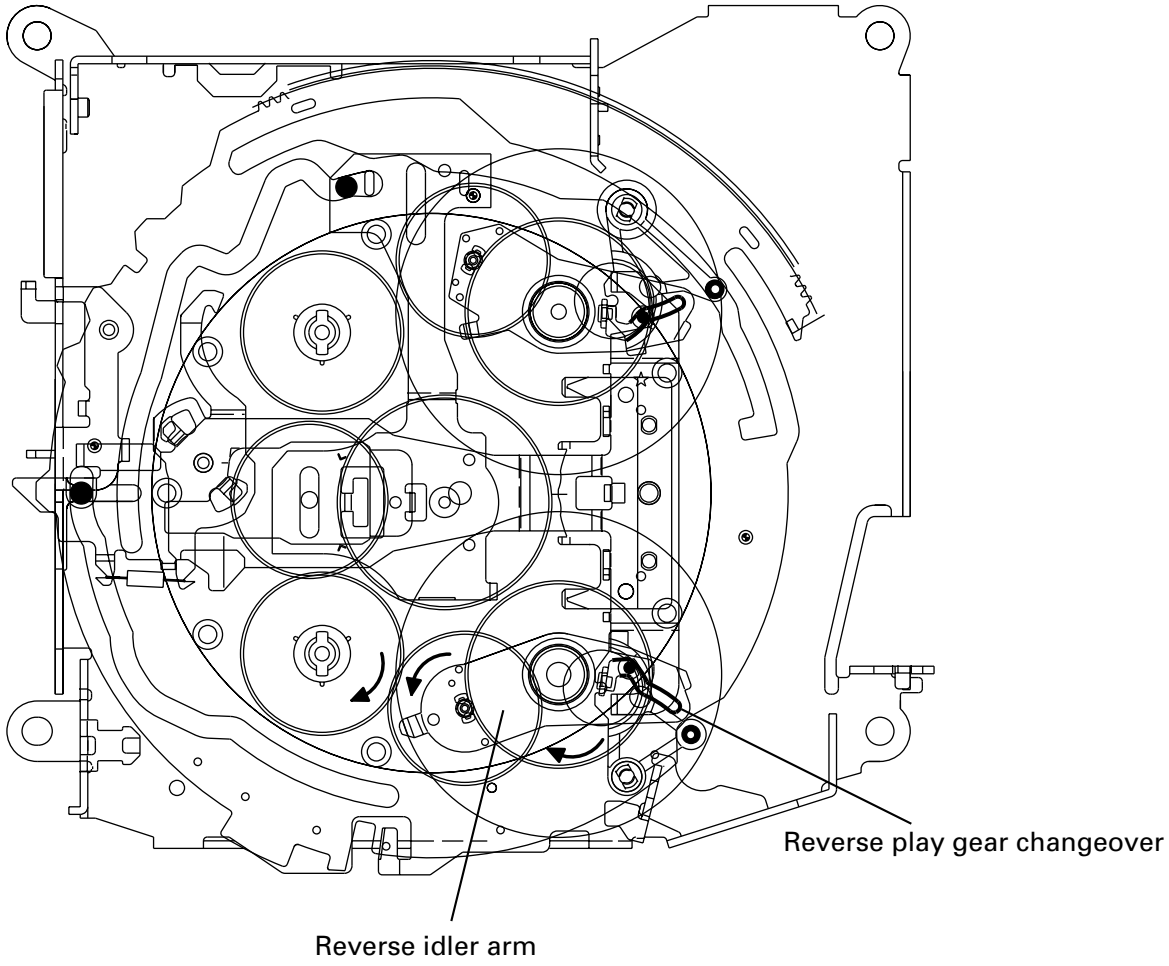
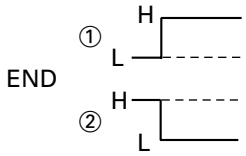
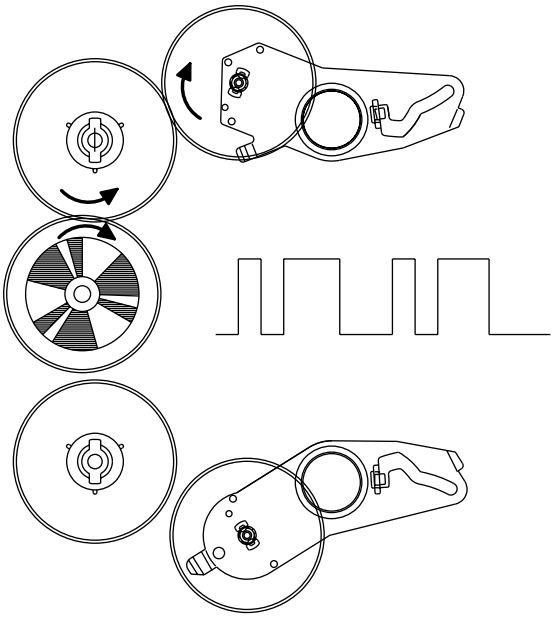


Fig.5

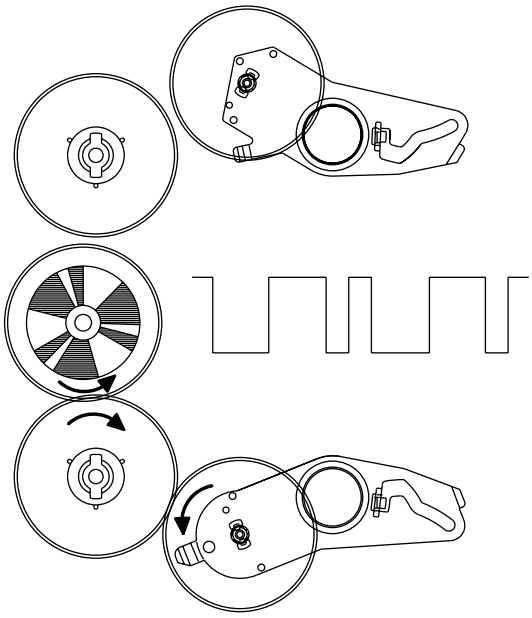
1.5 END SENSE



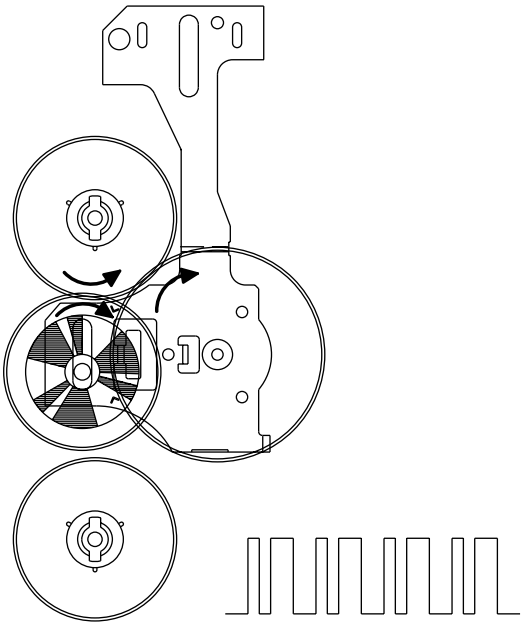
FWD



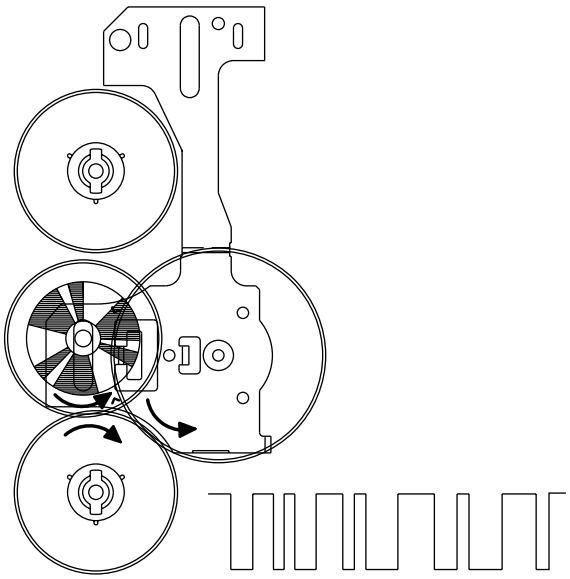
REV



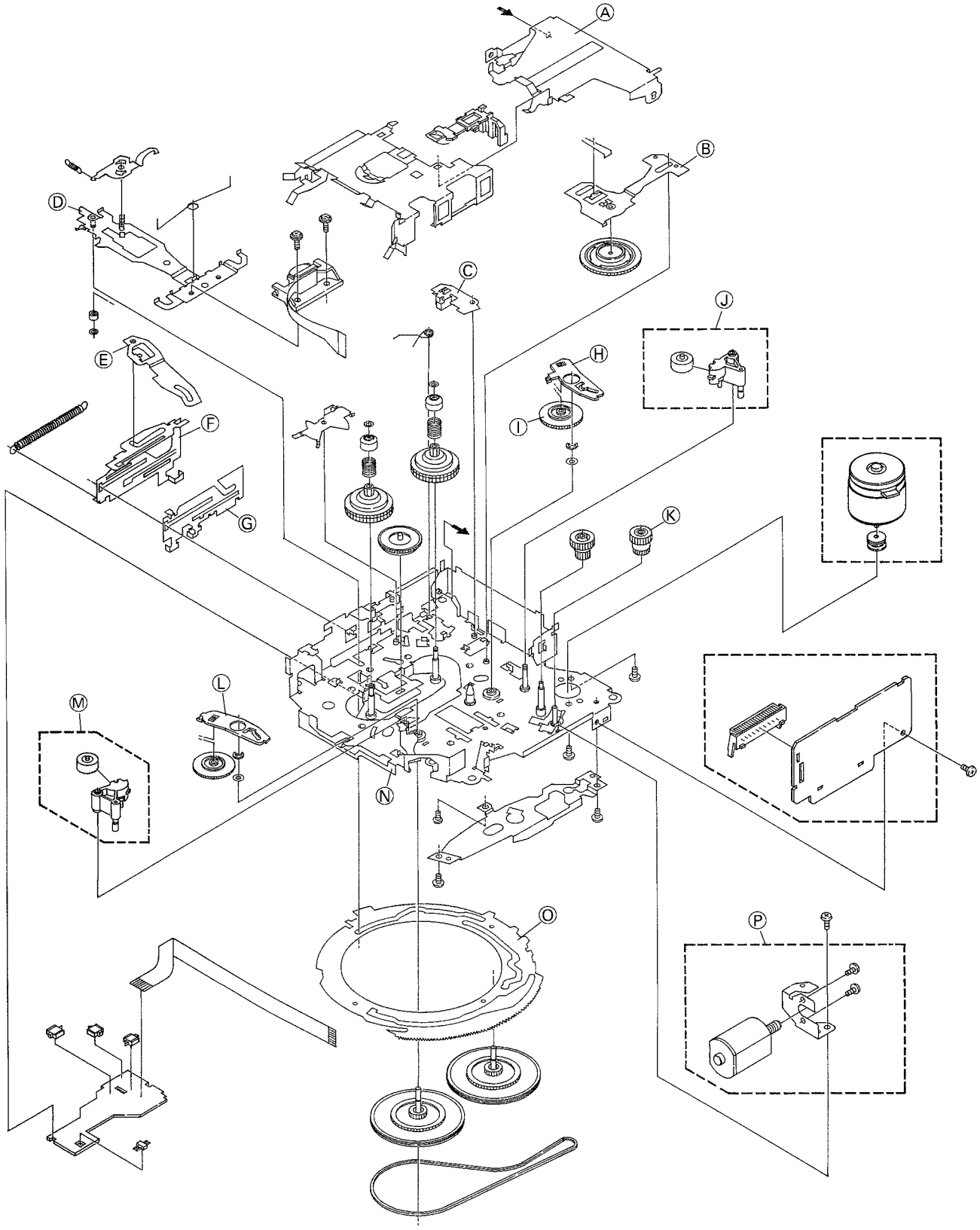
FF



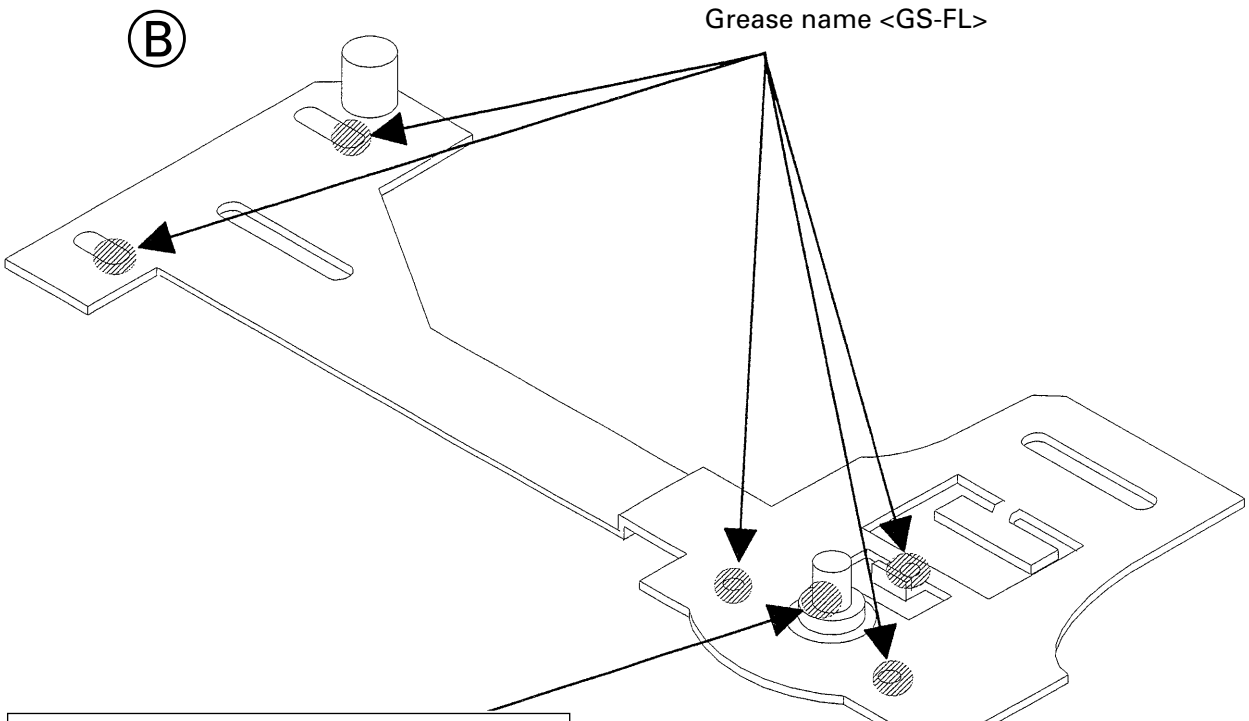
REW



2. GREASE APPLICATION LOCATION AND GREASE NAME

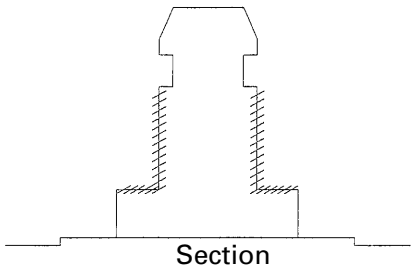


● **F/R Lever 1**



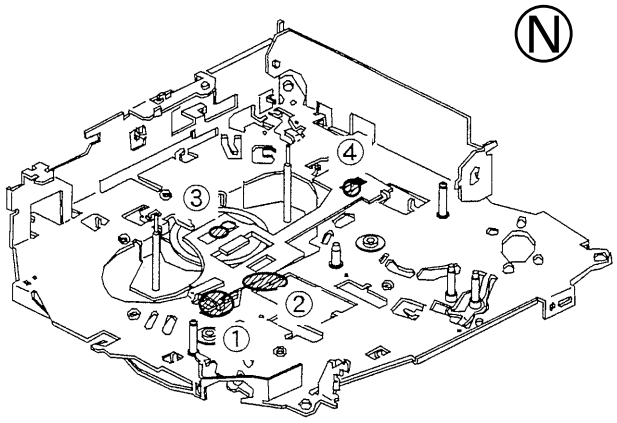
The root of Shaft.

Slant-part as following figure.

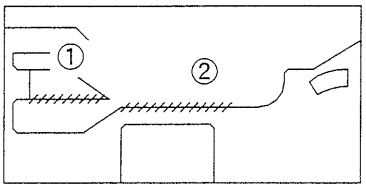


Section

● **Chassis 1 and F/R Lever 2**

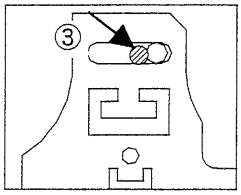


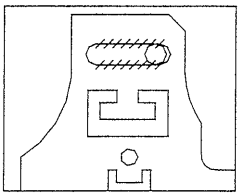
Ⓝ



①② Grease name <GS-FL>
The slant-parts in left figure.
The rubbing part between chassis and F/R lever.

Ⓑ

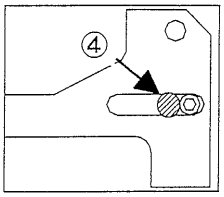


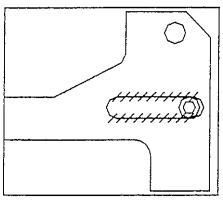


③ Grease name <CS-FL>
The side of shaft (after fix F/R lever).
The slant-parts in left figure.

The rubbing part between F/R lever and shaft.

Ⓑ

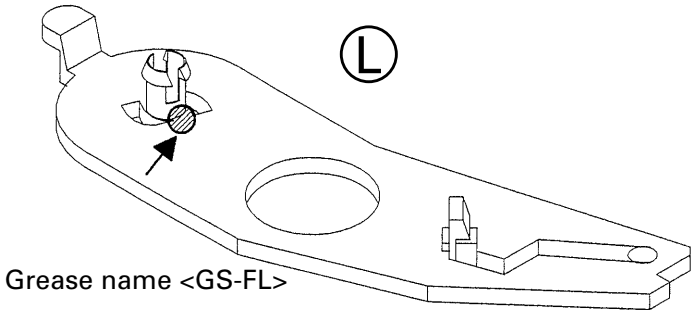




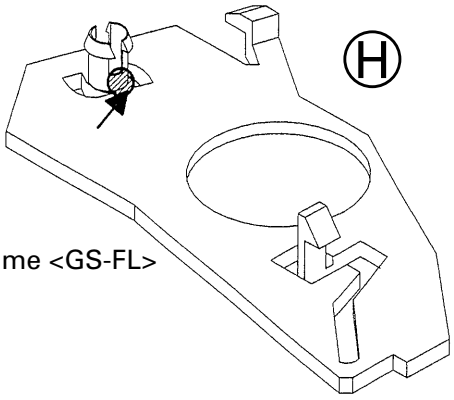
④ Grease name <GS-FL>
The side of bearing (after fix F/R lever).
The slant-parts in left figure.

The rubbing part between F/R lever and bearing.

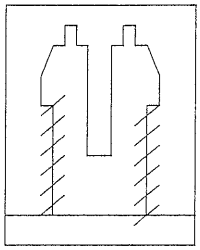
● **Idler arm**



Grease name <GS-FL>



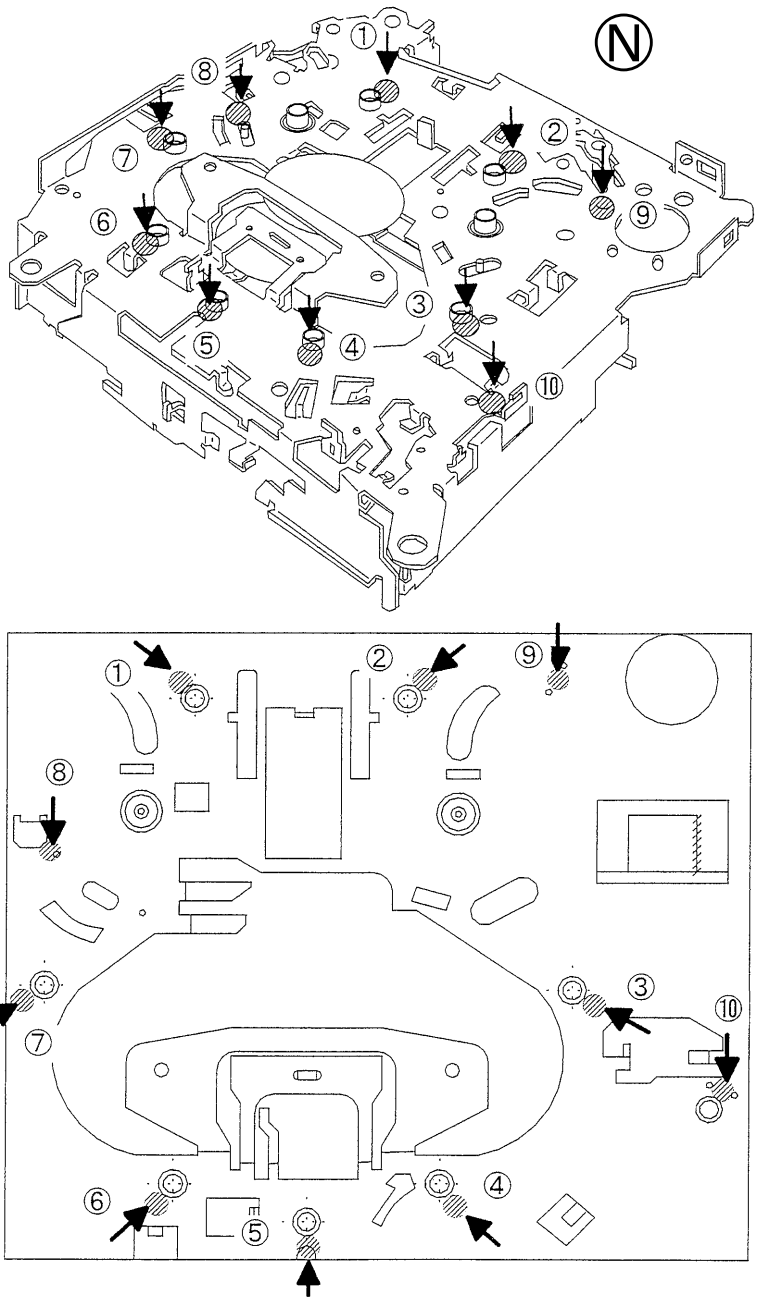
Grease name <GS-FL>



Each the root of boss.

Slant-part in left figure.

● **Chassis 2**



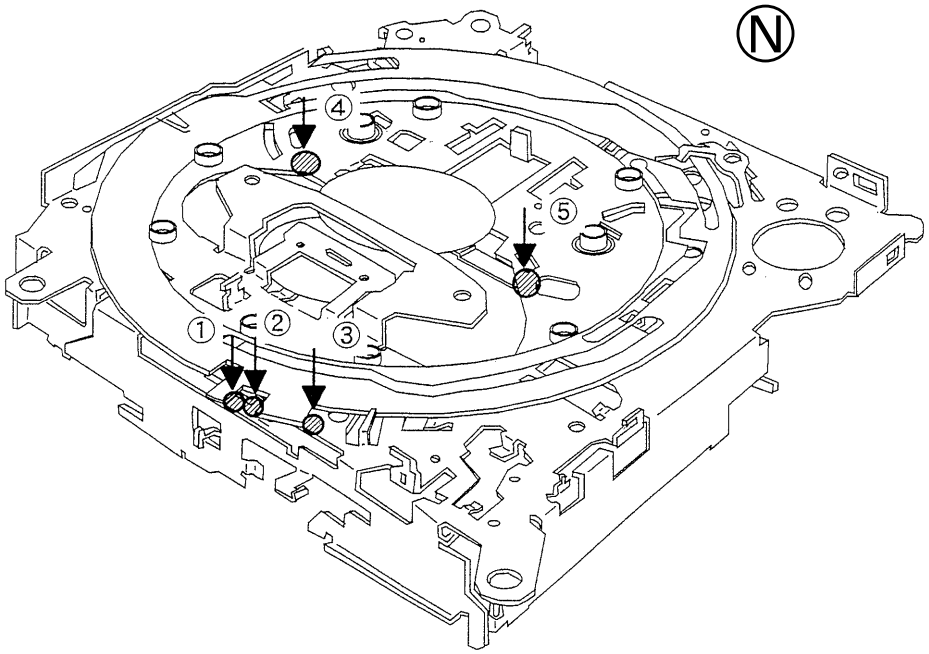
①②③④⑤⑥⑦ Grease name <GS-FLB>
Each the side of bearing.
Rubbing part between bearing and mode gear.

⑧ Grease name <GS-FLB>
The part between carved seal and whole.

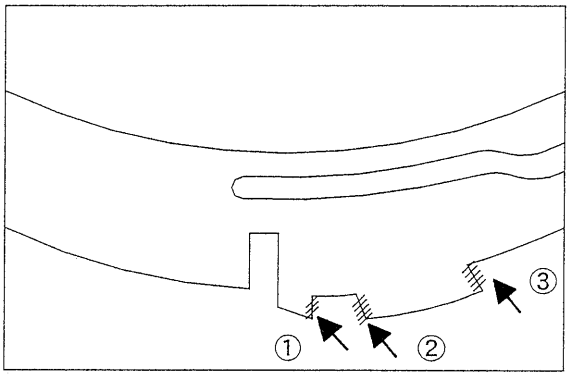
⑨⑩ Grease name <GS-FLB>
Each the part between carved seals.

Chassis and half-pierce of mode gear.

● **Mode gear and Chassis 3**



Ⓞ

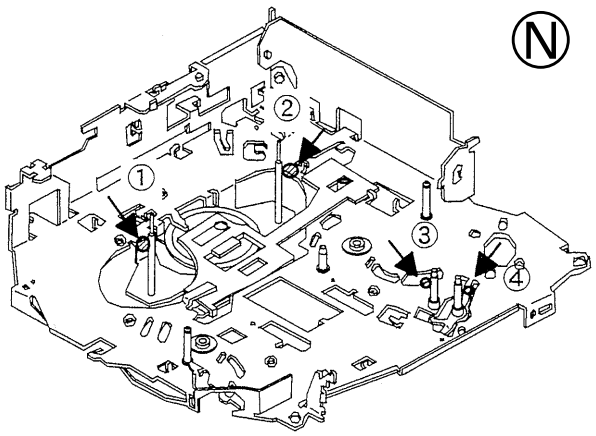


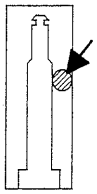
①②③ Grease name <GS-FLB>
Each the edge of cam (mode gear).

Slant-part in left figure.

④⑤ Grease name <GS-FLB>
Each the carved seal.
Rubbing part between chassis and idle gear.

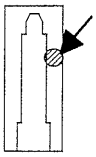
● **Chassis 4**





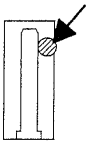
①② Grease name <GS-PG641>
Each the upper side of reel shaft (middle-step).

Slant-part in left figure.



③
The upper side of worm gear shaft.
The side and bottom of worm gear shaft.

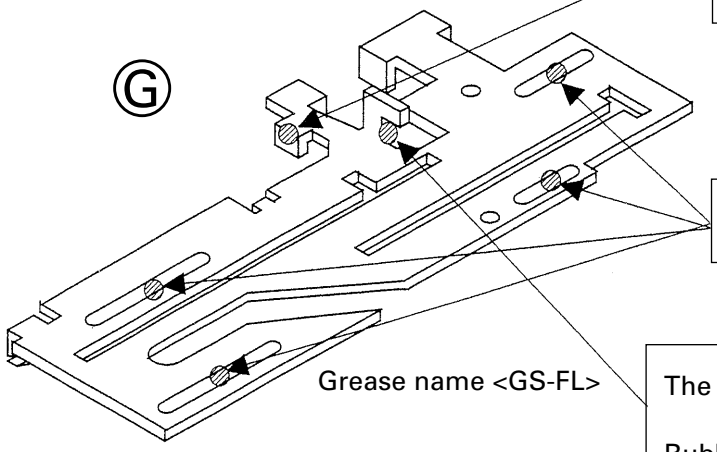
Slant-part in left figure.



④
The upper side of pre mode gear shaft.
The side and bottom of pre mode gear shaft.

Slant-part in left figure.

● **Put-down lever 1**



The bend part.

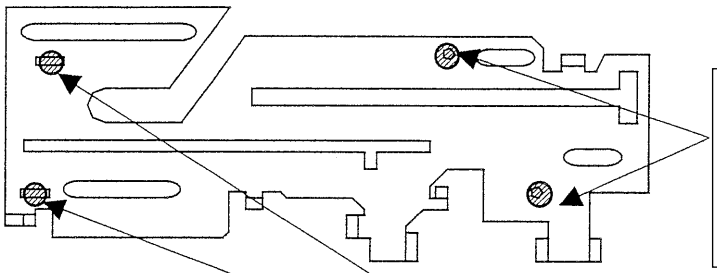
Rubbing part between load lever and HD base.

Each the half-pierce.

Grease name <GS-FL>

The point in left figure.

Rubbing part between load lever and edge (chassis).



Each the half-pierce.

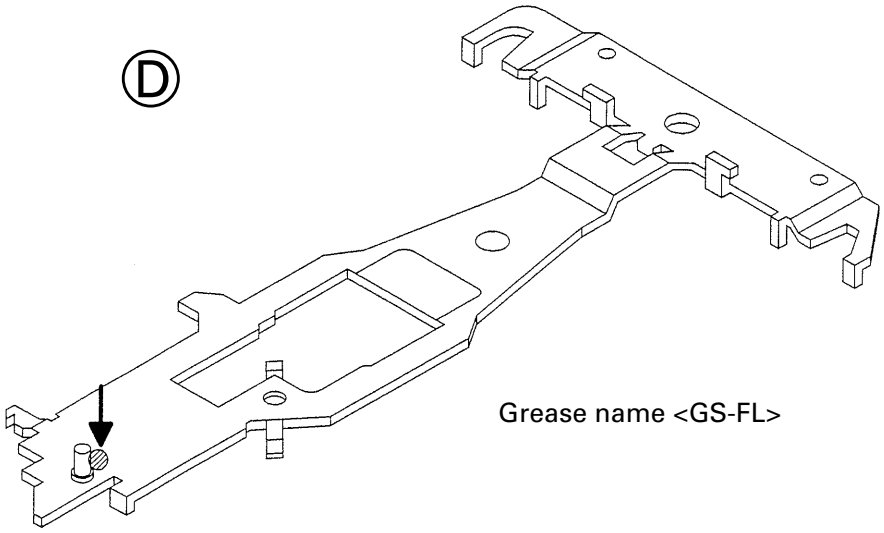
Rubbing part between half-pierce and load buffer lever.

Grease name <GS-FL>

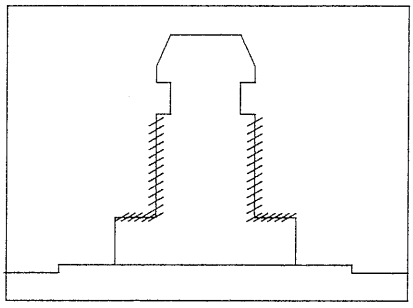
Each the carved seal.

Rubbing part between load lever and half-pierce (load buffer lever).

● **HD base**



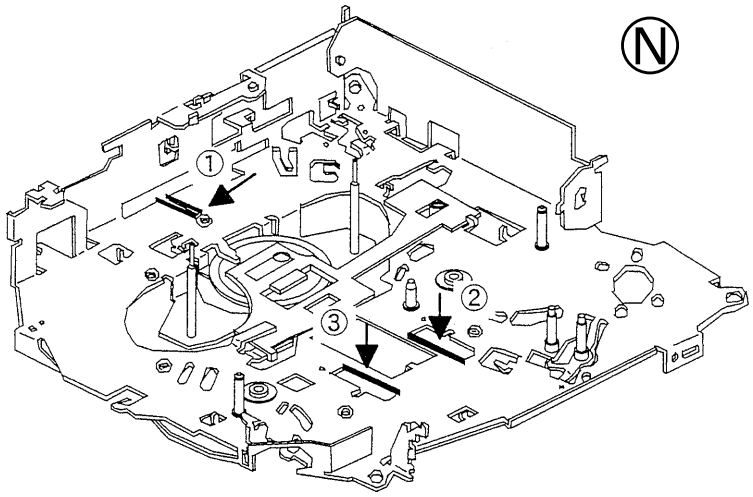
Grease name <GS-FL>

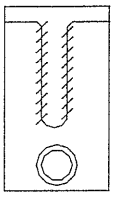


The side of shaft.
The side and bottom of shaft.

Slant-part in left figure.

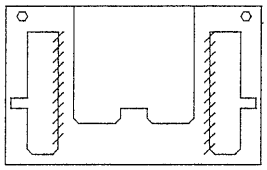
● **Chassis 5**





① Grease name <GS-FL>
The edge of slant-part in left figure.

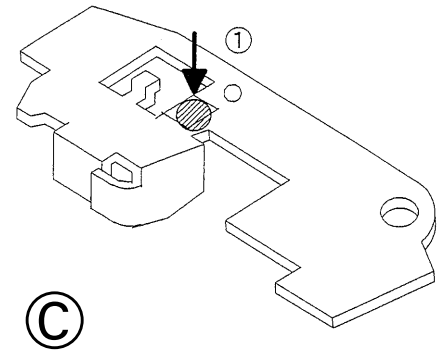
Rubbing between chassis and shaft of HD base.



②③ Grease name <GS-FL>
The edge of slant-part in left figure.

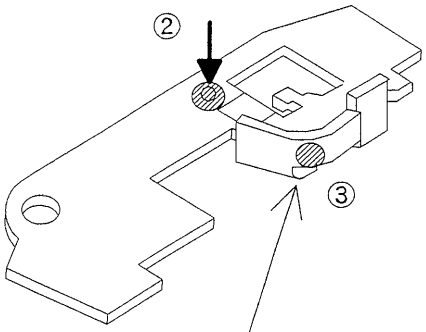
Rubbing between chassis and bend of HD base.

● **Mode arm**

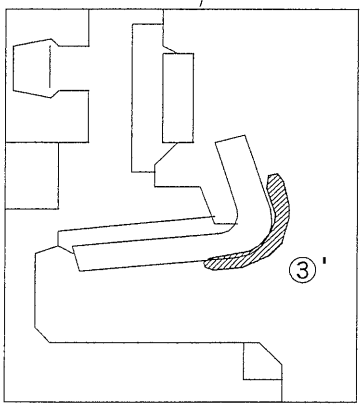


① Grease name <GS-FL>
The part in left figure.

Rubbing between mode arm and spring.



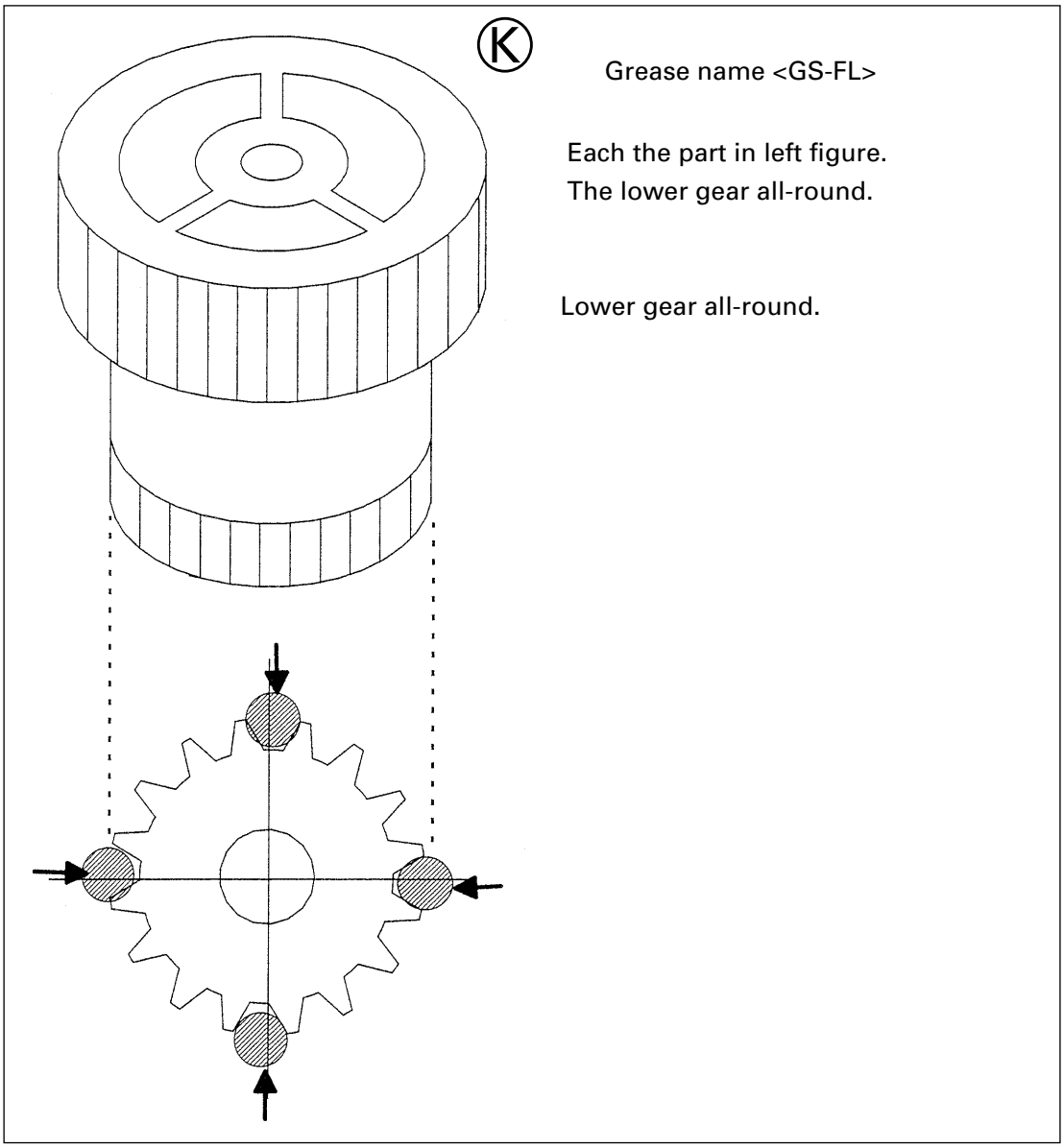
② Grease name <GS-FL>
The half-pierce.



③ Grease name <GS-FL>
The ③-part in left figure.
The ③'-part in left figure.

Rubbing between mode arm and cam (mode gear).

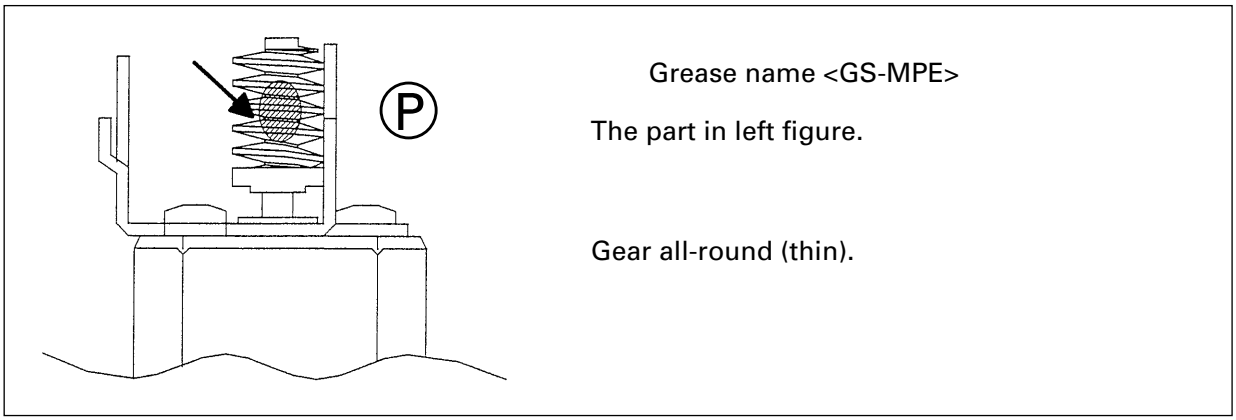
● **Pre mode gear and Worm gear**



Grease name <GS-FL>

Each the part in left figure.
The lower gear all-round.

Lower gear all-round.

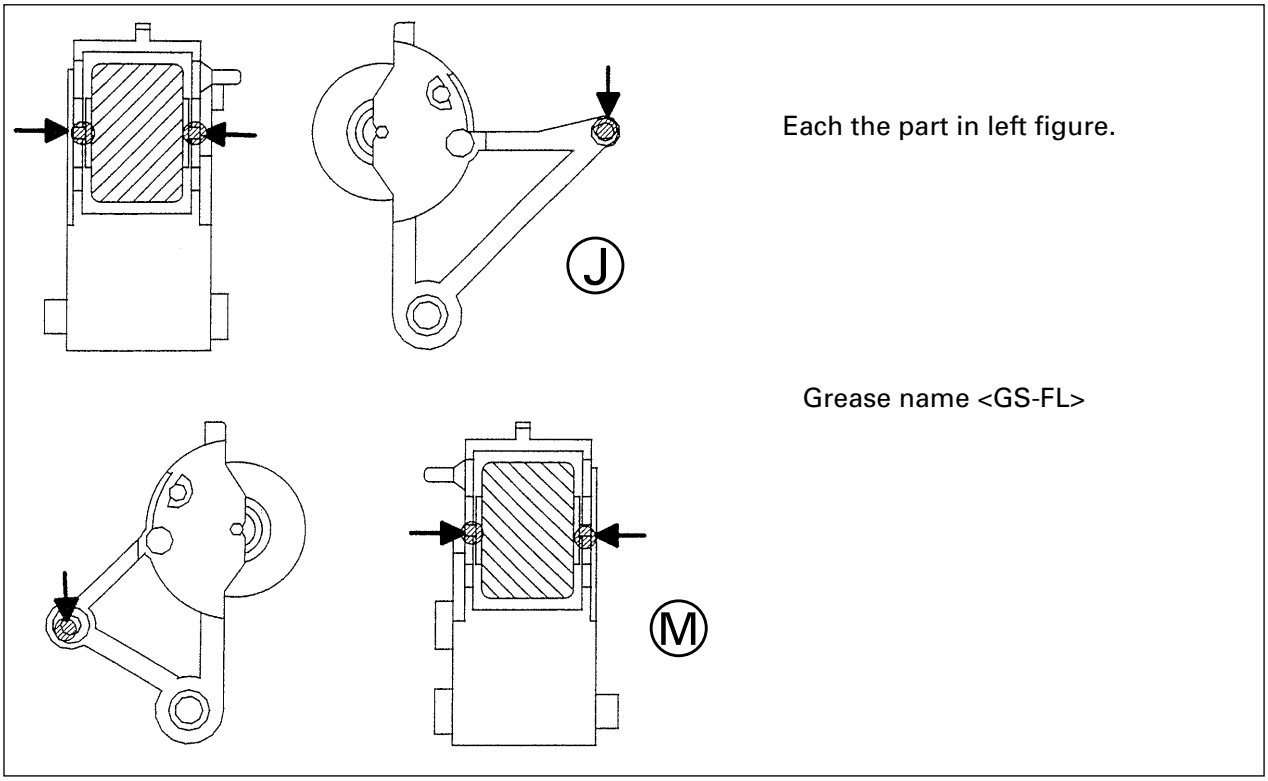


Grease name <GS-MPE>

The part in left figure.

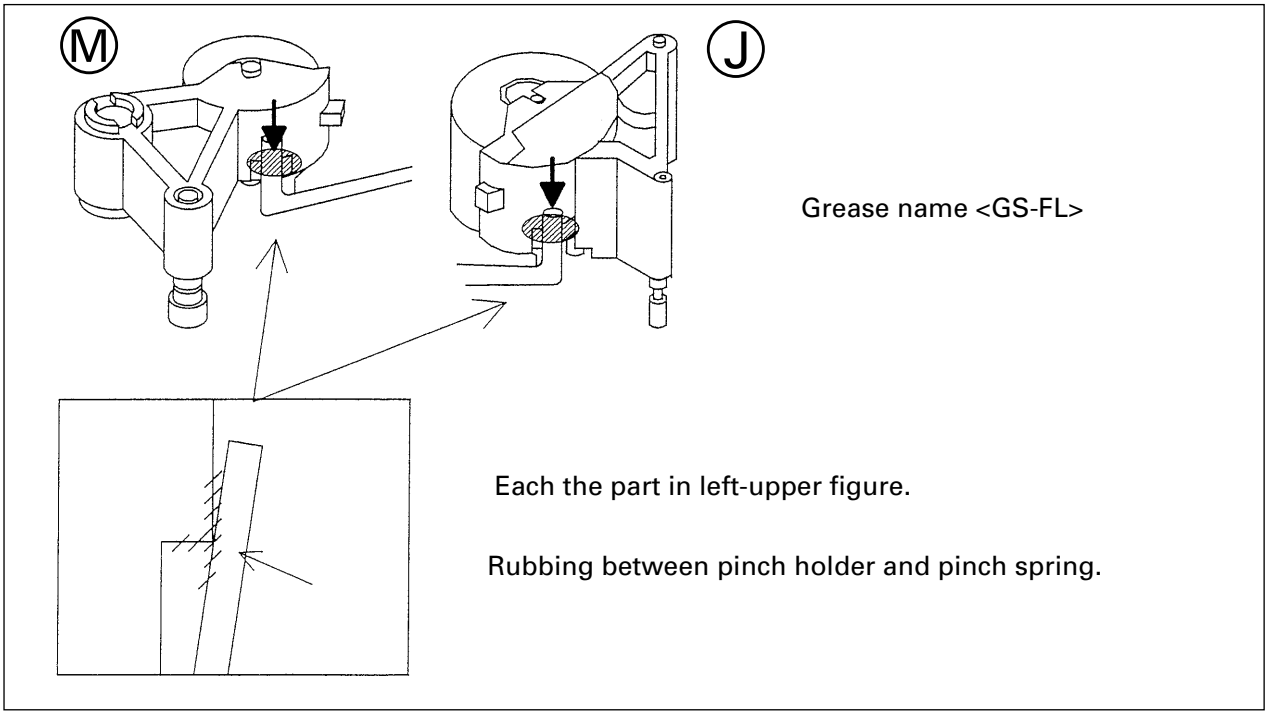
Gear all-round (thin).

● **N/R Pinch holder**



Each the part in left figure.

Grease name <GS-FL>

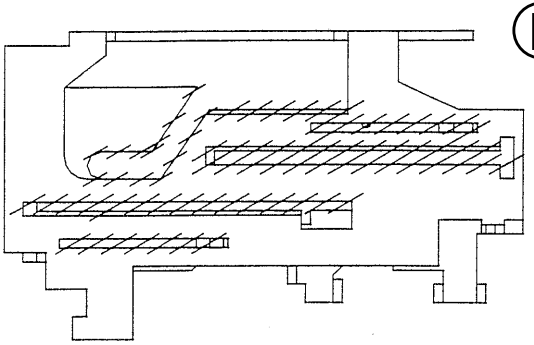


Grease name <GS-FL>

Each the part in left-upper figure.

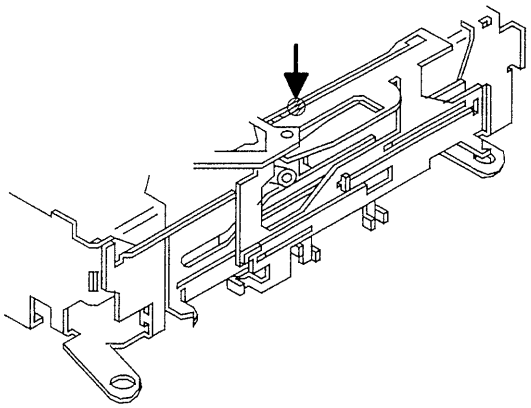
Rubbing between pinch holder and pinch spring.

● **Put-down lever 2 and Put-down buffer lever**



The edge of slant-part in left-upper figure.

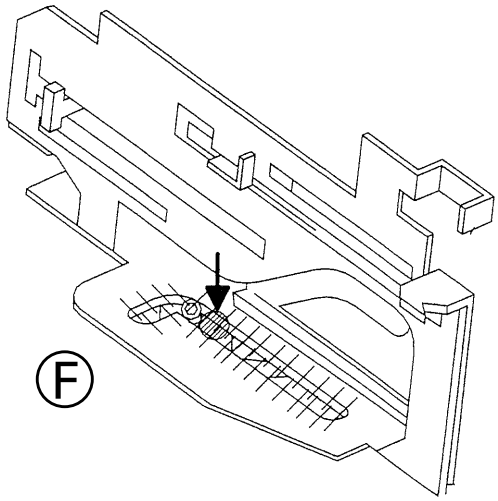
Grease name <GS-FL>



The allow-part in left figure.
The edge of slant-part in left figure.

Rubbing between load buffer lever and bend (chassis).

Grease name <GS-FL>

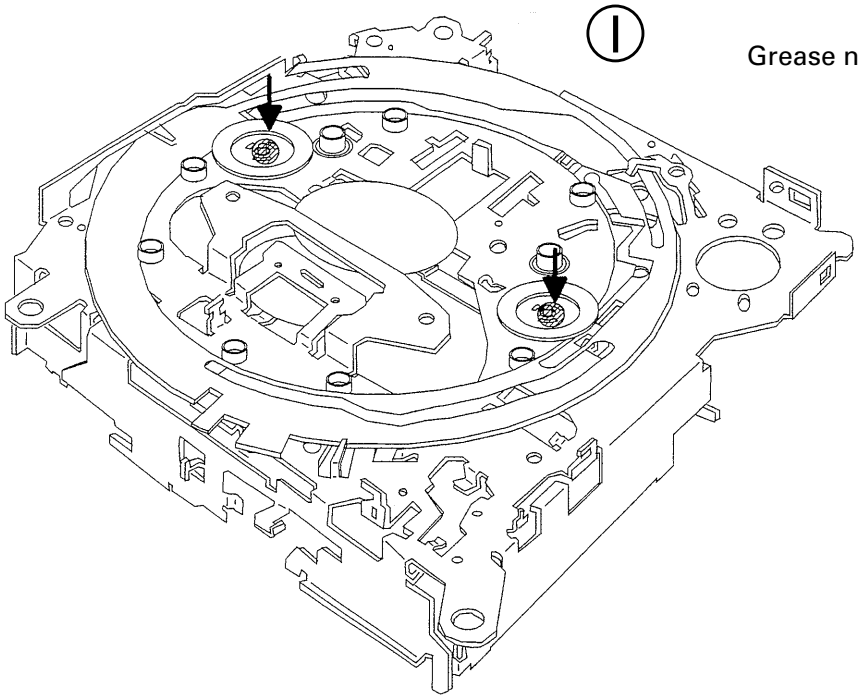


The allow-part in left figure.
(after fix load buffer lever).
The edge of slant-part in left figure.

Rubbing between load buffer lever and bearing (draw-in arm).

Grease name <GS-FL>

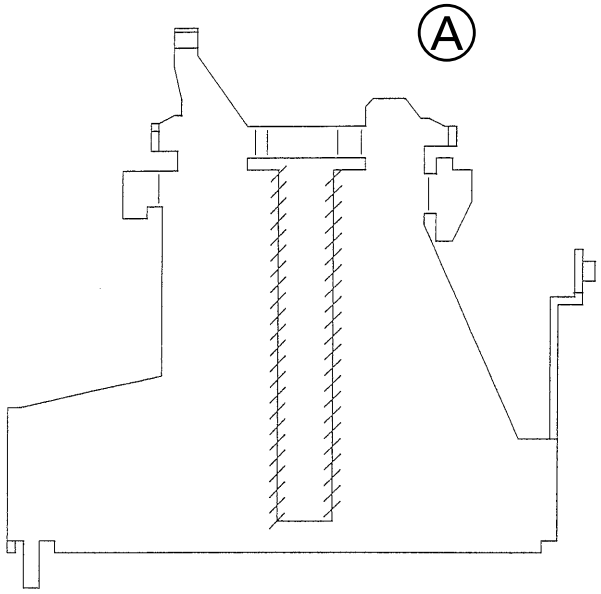
● **Idle gear**



Grease name <GS-FL>

The allow-part in upper figure. Rubbing between between idler gear and idler arm.

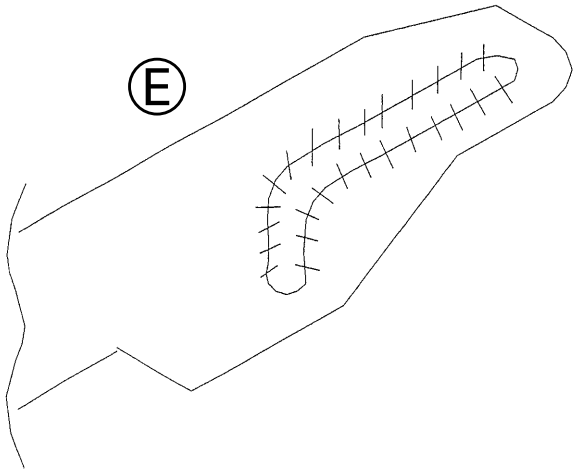
● **Cassette frame and Draw-in arm**



The slant-part in left figure (Thin).

Rubbing between cassette frame and draw-in lever.

Grease name <GS-FL>



The slant-part in left figure.

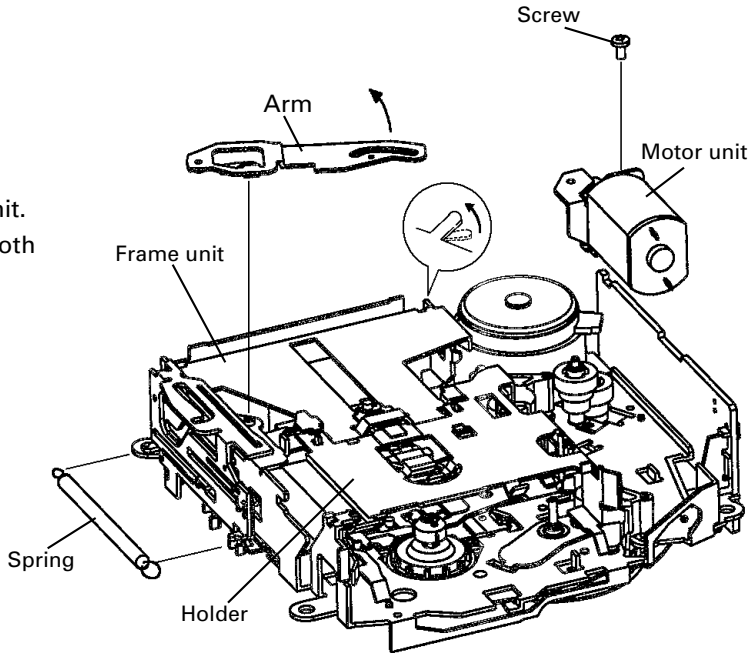
Rubbing between draw-in arm and draw-in lever.

Grease name <GS-FL>

3. DISASSEMBLY

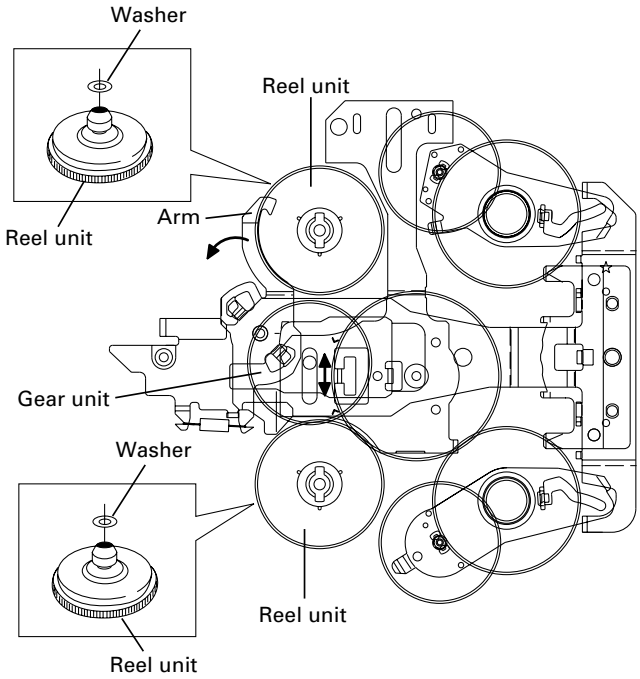
● Remove the Cassette holder

1. Remove the spring and the arm.
2. Remove the screw, and then remove the motor unit.
3. Straighten the frame unit pawl, and remove both holder and frame unit.



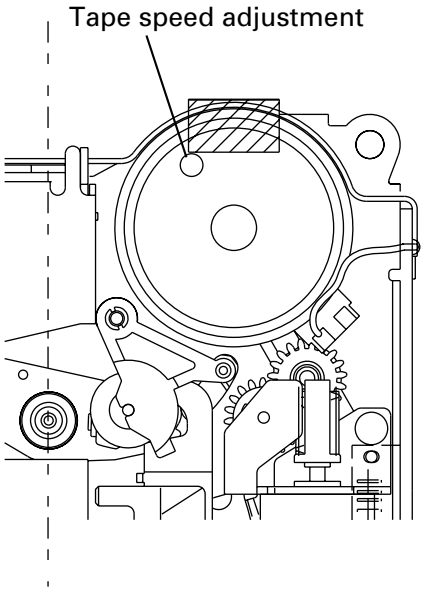
● Remove the Reel Unit

1. Remove the washer.
2. Slide the gear unit to separate it from the reel unit.
3. Push the arm in the direction marked with an arrow, and remove the reel unit.



4. ADJUSTMENT

4.1 TAPE SPEED ADJUSTMENT



● **Adjustment method**

1. Load the test tape NCT-111 (3kHz, -10dB)and play.
2. Adjust the semi-fixed resistor so that frequency counter shows 3015Hz(+75Hz, –45Hz).

4.2 CHECK POINTS OF CASSETTE MECHANISM

Confirm the following items when replacing parts of the cassette mechanism .	● Tape speed deviation: 3,000Hz +90Hz, –30Hz (4.76cm/s +3%, –1%) Using an NCT-111, measure the speed at the start and end of winding and take the maximum values.If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5–6 seconds.	● Wow and flutter: Less than 0.15%(WRMS) Using the NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer very considerably, adjust to 70 % of the minimum and maximum values. Measuring time shall be 5–6 seconds.
● Fast forward and rewinding time: 85–105 seconds Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.	● Winding torque: 45–70 g•cm (4.41–6.86mN•m) Using a cassette type torque meter (100 g•cm), measure the minimum value while in the play mode. Measuring time shall be 5–6 seconds.	● F.F. torque: More than 50 g•cm (4.9mN•m more) Using a cassette type torque meter (130 g•cm), measure the value when the tape stops in the F.F. mode.
● REW torque: More than 50 g•cm (4.9mN•m more) Using a cassette type torque meter (130 g•cm), measure the value when the tape stops in the REW mode.	● Back tension torque: 1.5–5.5 g•cm (0.15–0.54mN•m) After setting the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.	